START
WESTON
9613451.2796
0044601

ROY F. WESTON, INC.
LIONVILLE ANALYTICAL LABORATORY
ANALYTICAL CASE NARRATIVE

Client: WESTINGHOUSE HANFORD
RFW #: 9211L525

W.O. #: 06168-002-001-9999-00
Date Received: 11-03-92

GC/MS VOLATILE

The set of samples consisted of two (2) water samples collected on 10-30-92.

The samples were analyzed according to criteria set forth in CLP SOW 03/90 for TCL Volatile target compounds on 11-06,10-92.

The following is a summary of the QC results accompanying these sample results and a description of any problems encountered during their analyses:

1. Non-target compounds were not detected in these samples.

2. Two (2) of eighteen (18) surrogate recoveries were outside EPA QC limits. The analysis of sample B07L93 fulfilled the re-analysis requirement for its matrix spike samples.

3. All matrix spike recoveries were within EPA QC limits.

4. The laboratory blanks contained the common contaminant Methylene Chloride at levels less than the CRQL. The laboratory blank 92LVB217-MB1 also contained the target compound Chloroform at a level less than the CRQL.

5. All internal standard area and retention time criteria were met.

FEB 1996
RECEIVED
EDMC

Margaret M. Hershey

J. Peter Hershey, Ph.D.
Laboratory Manager
Lionville Analytical Laboratory

12/16/92
Date

tme/11-525v.cn

WESTON Analytics Use Only
92116 535

Rm: Josie
Ditto
Yellow
Eng
3/LAB
5/vendor

Custody Transfer Record/Lab Work Request

WESTON MANAGERS DESIGNERS/CONSULTANTS

Client Westinghouse - Hanford
Est. Final Proj. Sampling Date
Work Order # 06168-000 C01-9999 00
Project Contact/Phone #
AD Project Manager Josie Edwards
QC CLP Del CLP TAT 35 DAY
Date Rec'd 11/3/92 Date Due 12/8/92
Account # WS HANFORD

		VOA	BNA	Pest/PCB	[illegible]	TOC	TOX	Sol metals	Metal	CN	Anions PH, SPEC	Alkalinity TDS	Sulfide	NH3N COD	Radio-chem	Tritium C-14 Tc-99
Refrigerator #		1	4	—	4	1	1	4	4	4	4	4	4	4	2/3	
# Type Container	Liquid	3g	3g	—	1g	1AG	1AG	1P	1P	1P	1P	1P	1P	1P	~~1P~~	~~1P~~
	Solid															
Volume	Liquid	40ml	2L	—	500	125	250	1L	1L	1L	500	500	1L	500	~~1L~~	~~1L~~
	Solid															
Preservatives		—	—	—	H2SO4	H2SO4	H2SO4	HNO3	HNO3	NaOH	—	—	NaOH ZnAc	H2SO4	HNO3	~~HCL~~

ANALYSES REQUESTED → ORGANIC (VOA, BNA, Pest/PCB), INORG (Metal, CN)

MATRIX CODES:
S - Soil
SE - Sediment
SO - Solid
SL - Sludge
W - Water
O - Oil
A - Air
DS - Drum Solids
DL - Drum Liquids
L - EP/TCLP Leachate
WI - Wipe
X - Other
F - Fish

WESTON Analytics Use Only

Lab ID	Client ID Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	0604H	0628H	0608H	IN3N2	IOCT	ITOX	MHSLSOW	MHSCTOW	ICNTO	ICSO4 ICFL ICPO4 ICCL IPH ISRD	IAIKL ITDS	ISFD	INH3N ICOD	ISUB	
1	B07L90			W	10/30/92		✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓
2	B07L92			∣	∣								✓								
3	B07L93			⊥	⊥		✓														

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Special Instructions:
Anions = ICSO4, ICFL, ICPO4, ICCL
W93-0-0059-13
92-360

Run (1) MS/MSD

DATE/REVISIONS:
11/4/92 1. Quicks out of Hold
2.
3.
4.
5.
6.

WESTON Analytics Use Only

Samples were:
1) Shipped ✓ or Hand Delivered ___
Airbill # ___
2) Ambient or (Chilled)
3) Received in Good Condition (Y) or N
4) Labels Indicate Properly Preserved (Y) or N
5) Received Within Holding Times (Y) or (N)

COC Tape was:
1) Present on Outer Package (Y) or N
2) Unbroken on Outer Package (Y) or N
3) Present on Sample (Y) or N
4) Unbroken on Sample (Y) or N

COC Record Present Upon Sample Rec't (Y) or N

Discrepancies Between Samples Labels and COC Record? Y or (N)
NOTES:
ICPO4, PH, SRD out of Hold

Relinquished by	Received by	Date	Time	Relinquished by	Received by	Date	Time
Emery	TM Jason	11/3/92	14:30				
	BCS	11/3/92		BCS 11/3/92			

RFW 21-21-001/A-7/91 ___ L372 ___ L373 ___ L375 ___ L377 ___ L378 Ref# N/A Cooler# SML-116 381 596a

9613451.2797

0000002

9613451.2798 0000003

Westinghouse Hanford Company	CHAIN OF CUSTODY

Custody Form Initiator PH BUTCHER

Company Contact PH BUTCHER

Telephone (509)376-5045

Project Designation/Sampling Locations 100-HR-3

Collection Date 10-30-92

Ice Chest No. 5 ML-116

Field Logbook No. EFL-0057

Bill of Lading/Airbill No. 251900 6534

Offsite Property No. W92-W93-0-005
AJS
11/2/93

Method of Shipment EMERY

Shipped to WESTON

Possible Sample Hazards/Remarks N/A

9211L 525

Sample Identification

BO 7<90

1, 1L, P, WATER, CLP-ICP/AA METALS & Hg (HNO3) UNFILTERED
1, 1L, P, WATER, CLP-CYANIDE (NaOH)
3, 40ml, Gs, WATER, CLP-VOA
3, 2L, aG, WATER, CLP-SEMI-VOA & PCB/PEST
1, 500ml, P, WATER, ANIONS(IC) (SO4,F,PO4,Cl), COND., pH
1,4L 3 → ~~2, 4L~~, P, WATER, GROSS ALPHA/BETA, GAMMA SPEC, ALPHA SPEC (U-235/238,Pu-239/240, Am-241), Sr-90 (HNO3)
1,2L
2,250ml ~~1, 500ml~~, Gs, WATER, TRITIUM, C-14
LW 10-30-92 ~~1, 250ml, P,~~ WATER, NO2,NO3 (H2SO4)
1, 500ml, G, WATER, ALKALINITY, TOTAL DISSOLVED SOLIDS
1, 1L, P, WATER, SULFIDE (ZINC ACETATE+NaOH pH>9)
1,500ml, 6 LW 10-30-92 1, 500ml, G, WATER, AMMONIA, CHEMICAL OXYGEN DEMAND (H2SO4 pH<2)
1, 1L, P, WATER, Tc-99 (HCl)
1, 125ml, aG, WATER, TOC (H2SO4)
1, 250ml, aG, WATER, TOX (H2SO4)

BO 7<92

1, 1L, P, WATER, CLP-ICP/AA METALS & Hg (HNO3) FILTERED

BO 7<95

3, 40ml, Gs, WATER, CLP-VOA

[ ] Field Transfer of Custody	Chain of Possession	(Sign and Print Names)
Relinquished by: [illegible]	Received by: Refrig. #1	Date/Time: 10-30-92 / 1530
Relinquished by: [illegible]	Received by:	Date/Time:
Relinquished by: [illegible]	Received by: [illegible]	Date/Time: 11/3/92 1439hrs
Relinquished by: [illegible]	Received by:	Date/Time:

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments:

A-6000-407 (12/90) (EF) WEF061
Chain of Custody

9613451.2799 0000004

Westinghouse Hanford Company

SAMPLE ANALYSIS REQUEST

PART I: FIELD SECTION

Collecto K. Lee, L. Walker Date Sampled 10-30-92 Time 1230 hours

Company P. H. Butcher Telephone (509) 376-5045

Sample Number	Number and Type of Sample	Type of Sample*	Analysis Requested
BO 7690	1; 1L; P;	WATER	CLP ICP/AA METALS & Hg (HNO3) UNFILTERED
	1; 1L; P	WATER	CLP-CYANIDE (NaOH)
	3; 40ml; Gs	WATER	CLP-VOA
	2; 2L; aG	WATER	CLP-SEMI-VOA & PCB/PEST
	1; 1L; P	WATER	ANIONS(IC)(SO4,F,PO4,Cl); CONDUCTIVITY; pH
1,4L 1,2L 3-	~~2; 4L;~~ P	WATER	GROSS ALPHA/BETA;GAMMA SPEC;ALPHA SPEC
	LH 10-30-92		(U-235/238,Pu-239/240,Am-241); Sr-90 (HNO3)
	2,250ml ~~1; 500ml; G~~	WATER	TRITIUM, C-14
	1; 500ml; P;	WATER	ANIONS(NO2/NO3) (H2SO4)
	1; 1L; G;	WATER	ALKALINITY; TOTAL DISSOLVED SOLIDS
	1; 500ml; G;	WATER	SULFIDE (ZINC ACETATE + NaOH pH>9)
	1; 500ml; G;	WATER	AMMONIA; CHEMICAL OXYGEN DEMAND(H2SO4 pH<2)
	1; 1L; P;	WATER	Tc-99 (HCL)
BO	1; 125ml; aGs;	WATER	TOC (H2SO4)
	1; 250ml; aGs;	WATER	TOX (H2SO4)
BO 7692	1; 1L; P;	WATER	CLP-ICP/AA METAL & Hg (HNO3) FILTERED
BO 7693	3; 40ml; Gs;	WATER	CLP-VOA
			OPC: # W93- 0-0059-13
			BOL: # 251900653U
			TASK: 92-360

Field

Special Handling and/or

Possible Sample

PART II: LABORATORY SECTION

Received Brian E. Shaffer Titl UNIT Leader Date 11/3/92 1439

Analysis

*Indicate whether sample is soil, sludge, water, etc.

**Use back of page for additional information relative to sample location.

A-6000-406(05/90)

OVERNIGHT DELIVERY 0000005 Signature Security Service

Contractor	OFF-SITE PROPERTY CONTROL	CONTROL NUMBER (To be obtained from PROPERTY MANAGEMENT)
WHC		W93-0-0059-13

PART I – TO BE COMPLETED BY ORIGINATOR

Department	Section	Unit
Env. Eng. & Tech.	Geosciences	Geochem. & Hydrochem.

The following items are to be shipped from ☒ Contractor ☐ Vendor

Routing Emery ☒ Contractor ☐ Vendor

Shipped to Weston
208 Welch Pool Rd.
Lionville, PA 19341

Off-site Custodian

Full Title

Quantity	Description (Include Serial and any Government Tag Numbers)	Original Cost
1 41 lbs.	Sample #: B07L36 B07L81 B07L91 B07L46 B07KY1 B07KZ1 B07KV1 Cooler ID: Z30 SML / B07KX6 B07L06 B07KX1 B07L01 B07KW6 B07KY6 Polycooler with groundwater samples packed in wet ice and vermiculite	N/A
1 ~~25~~ lbs.	Sample #: B07L90 B07L92 B07L93 Cooler ID: SML-116 Polycooler with groundwater samples packed in wet ice and vermiculite	N/A

☐ Classified ☒ Unclassified ☐ Shipped Under DOE Contract ☐ Shipped Under Contractor's Use Permit Contract

Necessity for the Off-Site Use of this Property

Sampling supports RI/FS work in the 100 Areas

Bill of lading # 251900653 4

CERTIFICATION OF THE RADIATION MONITORING RELEASE MUST BE SECURED THE SAME DAY THAT MATERIAL IS DELIVERED TO SHIPPING.

RM Clearance for Public Release	RM Survey No.	Date
[illegible]	# 365	11/2/92

Location of Property (Area & Bldg.)	Contact	Phone
100 N-3	PH Butcher	(509) 376-6045

Date Ready for Shipment	Cost Code to be Charged	Approximate Date This Property will be Returned
11/2/92	WB1220 / PC 31A	

Originated By	Date	Authorized By	Date
P.H. BUTCHER		AJ SIMPSON	11/2/92

Signature and Name of Property Control	Custodian Date	Property Management Approval	Date
			11/2/92

PART II – TO BE COMPLETED BY SHIPPING

Signature of Recipient	Return Order No.	Date Issued	Purchase Order No.	Date Issued
Date 11 [illegible]				

DISTRIBUTION

By Originator	Shipping Operation – Sign all Copies and Forward to:
White, Green, Yellow, Pink – Property Management Goldenrod – Retain	White – Property Management Yellow – Retain Green – Property Control Custodian (Issuing Office) Pink – Originator

54-3000-479 (09/89)

EMERY WORLDWIDE

A CF Company

SIGNATURE AND TALLY RECORD

60029 46 (8-89) Litho USA

DATE: 11-02-92 SHIPMENT NO.: 251900653 4

SHIPPER: WESTINGHOUSE SHIPPING DEPT (509) 376-6

REFERENCE NO.: W93-0-0059#13

SHIPPER NAME AND ADDRESS

WESTINGHOUSE SHIPPING DEPT (509) 376-6665
G2-05 U.S. DEPARTMENT OF ENERGY C/O
WESTINGHOUSE HANFORD COMPANY
2355 STEVENS DRIVE 1163 BUILDING
PO BOX 1970
RICHLAND WA 99352

CONSIGNEE NAME AND ADDRESS

JOSIE KING
RF WESTON INC
208 WELSH POOL ROAD
LIONVILLE PA 19341

Pieces	Weight	Description/Marks	Emery Authorization No.
2	134 LBS	COOLER ID: 230 SNL 490; SNL 116 85# WATER SAMPLES	

EACH PERSON HANDLING OR TAKING CUSTODY OF THIS SHIPMENT MUST SIGN AND COMPLETE THE INFORMATION BELOW

	Name of Person/Company	Transship Point/Destination	Signature of Person Accepting Custody	Time/Date
1.				
2.				
3.	[illegible]	PHL	[illegible]	[illegible]
4.				
5.				
6.	[illegible]	PHL	[illegible]	11/3 10:00
7.	[illegible]			11/4 [illegible]
8.				

SPECIAL HANDLING INSTRUCTIONS

CONSIGNEE COPY

9613451.2801 0000036

Roy F. Weston, Inc. - Lionville Laboratory
Volatiles by GC/MS, HSL List

Report Date: 12/10/92 16:53

RFW Batch Number: 9211L525   Client: WESTINGHOUSE HANFORD   Work Order: 6168-02-0   Page: 1a

	Cust ID:	B07L90		B07L93		B07L93		B07L93		VBLK		VBLK	
Sample Information	RFW#:	001		003		003 MS		003 MSD		92LVB215-MB1		92LVB217-MB1	
	Matrix:	WATER		WATER		WATER		WATER		WATER		WATER	
	D.F.:	1.00		1.00		1.00		1.00		1.00		1.00	
	Units:	UG/L		UG/L		UG/L		UG/L		UG/L		UG/L	
Surrogate Recovery	Toluene-d8	95	%	95	%	88	%	90	%	97	%	90	%
	Bromofluorobenzene	88	%	91	%	79 *	%	85 *	%	94	%	87	%
	1,2-Dichloroethane-d4	105	%	107	%	83	%	97	%	110	%	106	%
			fl		fl		fl		fl		fl		fl
Chloromethane		10	U	10	U	10	U	10	U	10	U	10	U
Bromomethane		10	U	10	U	10	U	10	U	10	U	10	U
Vinyl Chloride		10	U	10	U	10	U	10	U	10	U	10	U
Chloroethane		10	U	10	U	10	U	10	U	10	U	10	U
Methylene Chloride		5	JB	5	JB	2	JB	4	JB	3	J	2	J
Acetone		10	U	10	U	10	U	10	U	10	U	10	U
Carbon Disulfide		10	U	10	U	10	U	10	U	10	U	10	U
1,1-Dichloroethene		10	U	10	U	113	%	103	%	10	U	10	U
1,1-Dichloroethane		10	U	10	U	10	U	10	U	10	U	10	U
1,2-Dichloroethene (total)		10	U	10	U	10	U	10	U	10	U	10	U
Chloroform		10	U	10	U	10	U	10	U	10	U	2	J
1,2-Dichloroethane		10	U	10	U	10	U	10	U	10	U	10	U
2-Butanone		10	U	10	U	10	U	10	U	10	U	10	U
1,1,1-Trichloroethane		10	U	10	U	10	U	10	U	10	U	10	U
Carbon Tetrachloride		10	U	10	U	10	U	10	U	10	U	10	U
Bromodichloromethane		10	U	10	U	10	U	10	U	10	U	10	U
1,2-Dichloropropane		10	U	10	U	10	U	10	U	10	U	10	U
cis-1,3-Dichloropropene		10	U	10	U	10	U	10	U	10	U	10	U
Trichloroethene		10	U	10	U	109	%	108	%	10	U	10	U
Dibromochloromethane		10	U	10	U	10	U	10	U	10	U	10	U
1,1,2-Trichloroethane		10	U	10	U	10	U	10	U	10	U	10	U
Benzene		10	U	10	U	101	%	106	%	10	U	10	U
trans-1,3-Dichloropropene		10	U	10	U	10	U	10	U	10	U	10	U
Bromoform		10	U	10	U	10	U	10	U	10	U	10	U
4-Methyl-2-pentanone		10	U	10	U	10	U	10	U	10	U	10	U
2-Hexanone		10	U	10	U	10	U	10	U	10	U	10	U
Tetrachloroethene		10	U	10	U	10	U	10	U	10	U	10	U
1,1,2,2-Tetrachloroethane		10	U	10	U	10	U	10	U	10	U	10	U
Toluene		10	U	10	U	111	%	112	%	10	U	10	U

*= Outside of EPA CLP QC limits.

9613451.2802

Cust ID:	B07L90	B07L93	B07L93	B07L93	VBLK	VBLK
RFW#:	001	003	003 MS	003 MSD	92LVB215-MB1	92LVB217-MB1
Chlorobenzene	10 U	10 U	114 %	116 %	10 U	10 U
Ethylbenzene	10 U	10 U	10 U	10 U	10 U	10 U
Styrene	10 U	10 U	10 U	10 U	10 U	10 U
Xylene (total)	10 U	10 U	10 U	10 U	10 U	10 U

*= Outside of EPA CLP QC limits.

0060059

9613451.2803

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

B07L90

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-0

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) WATER

Lab Sample ID: 9211L525-001

Sample wt/vol: 5.00 (g/mL) ML

Lab File ID: B110615

Level: (low/med) LOW

Date Received: 11/03/92

% Moisture: not dec.

Date Analyzed: 11/06/92

GC Column: DB624 ID: .53(mm)

Dilution Factor: 1.00

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	5	JB
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	10	U
75-35-4	1,1-Dichloroethene	10	U
75-34-3	1,1-Dichloroethane	10	U
540-59-0	1,2-Dichloroethene (total)	10	U
67-66-3	Chloroform	10	U
107-06-2	1,2-Dichloroethane	10	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	10	U
56-23-5	Carbon Tetrachloride	10	U
75-27-4	Bromodichloromethane	10	U
78-87-5	1,2-Dichloropropane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
79-01-6	Trichloroethene	10	U
124-48-1	Dibromochloromethane	10	U
79-00-5	1,1,2-Trichloroethane	10	U
71-43-2	Benzene	10	U
10061-02-6	trans-1,3-Dichloropropene	10	U
75-25-2	Bromoform	10	U
108-10-1	4-Methyl-2-pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	10	U
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	10	U
100-42-5	Styrene	10	U
1330-20-7	Xylene (total)	10	U

CLIENT SAMPLE NO.

B07L90

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-0

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) WATER

Lab Sample ID: 9211L525-001

Sample wt/vol: 5.00 (g/mL) ML

Lab File ID: B110615

Level: (low/med) LOW

Date Received: 11/03/92

% Moisture: not dec.

Date Analyzed: 11/06/92

GC Column: DB624 ID: .53(mm)

Dilution Factor: 1.00

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.					

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

B07L93

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-0

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) WATER

Lab Sample ID: 9211L525-003

Sample wt/vol: 5.00 (g/mL) ML

Lab File ID: B110616

Level: (low/med) LOW

Date Received: 11/03/92

% Moisture: not dec.

Date Analyzed: 11/06/92

GC Column: DB624 ID: .53(mm)

Dilution Factor: 1.00

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	5	JB
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	10	U
75-35-4	1,1-Dichloroethene	10	U
75-34-3	1,1-Dichloroethane	10	U
540-59-0	1,2-Dichloroethene (total)	10	U
67-66-3	Chloroform	10	U
107-06-2	1,2-Dichloroethane	10	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	10	U
56-23-5	Carbon Tetrachloride	10	U
75-27-4	Bromodichloromethane	10	U
78-87-5	1,2-Dichloropropane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
79-01-6	Trichloroethene	10	U
124-48-1	Dibromochloromethane	10	U
79-00-5	1,1,2-Trichloroethane	10	U
71-43-2	Benzene	10	U
10061-02-6	trans-1,3-Dichloropropene	10	U
75-25-2	Bromoform	10	U
108-10-1	4-Methyl-2-pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	10	U
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	10	U
100-42-5	Styrene	10	U
1330-20-7	Xylene (total)	10	U

9613451.2807 0000033

1E

CLIENT SAMPLE NO.

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

B07L93

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-0

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) WATER

Lab Sample ID: 9211L525-003

Sample wt/vol: 5.00 (g/mL) ML

Lab File ID: B110616

Level: (low/med) LOW

Date Received: 11/03/92

% Moisture: not dec.

Date Analyzed: 11/06/92

GC Column: DB624 ID: .53(mm)

Dilution Factor: 1.00

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				

Roy F. Weston, Inc. - Lionville Laboratory
Semivolatiles by GC/MS, HSL List

RFW Batch Number: 9211L525 Client: WESTINGHOUSE HANFORD Work Order: 6168-02-0 Report Date: 11/12/92 09:56 Page: 1a

	Cust ID:	B07L90	B07L90	B07L90	SBLK	SBLK BS
Sample Information	RFW#:	001	001 MS	001 MSD	92LE1881-MB1	92LE1881-MB1
	Matrix:	WATER	WATER	WATER	WATER	WATER
	D.F.:	1.00	1.00	1.00	1.00	1.00
	Units:	ug/L	ug/L	ug/L	ug/L	ug/L
Surrogate Recovery	Nitrobenzene-d5	65 %	74 %	67 %	70 %	64 %
	2-Fluorobiphenyl	65 %	71 %	67 %	70 %	63 %
	Terphenyl-d14	78 %	83 %	90 %	86 %	77 %
	Phenol-d5	67 %	66 %	67 %	65 %	64 %
	2-Fluorophenol	67 %	78 %	70 %	75 %	65 %
	2,4,6-Tribromophenol	78 %	86 %	86 %	78 %	78 %
	2-Chlorophenol-d4	68 %	76 %	70 %	73 %	66 %
	1,2-Dichlorobenzene-d4	59 %	67 %	60 %	63 %	57 %
Phenol		10 U	62 %	59 %	10 U	58 %
bis(2-Chloroethyl)ether		10 U	10 U	10 U	10 U	10 U
2-Chlorophenol		10 U	72 %	67 %	10 U	66 %
1,3-Dichlorobenzene		10 U	10 U	10 U	10 U	10 U
1,4-Dichlorobenzene		10 U	55 %	51 %	10 U	50 %
1,2-Dichlorobenzene		10 U	10 U	10 U	10 U	10 U
2-Methylphenol		10 U	10 U	10 U	10 U	10 U
2,2'-oxybis(2-Chloropropane)		10 U	10 U	10 U	10 U	10 U
4-Methylphenol		10 U	10 U	10 U	10 U	10 U
N-Nitroso-di-n-propylamine		10 U	70 %	65 %	10 U	66 %
Hexachloroethane		10 U	10 U	10 U	10 U	10 U
Nitrobenzene		10 U	10 U	10 U	10 U	10 U
Isophorone		10 U	10 U	10 U	10 U	10 U
2-Nitrophenol		10 U	10 U	10 U	10 U	10 U
2,4-Dimethylphenol		10 U	10 U	10 U	10 U	10 U
bis(2-Chloroethoxy)methane		10 U	10 U	10 U	10 U	10 U
2,4-Dichlorophenol		10 U	10 U	10 U	10 U	10 U
1,2,4-Trichlorobenzene		10 U	64 %	60 %	10 U	57 %
Naphthalene		10 U	10 U	10 U	10 U	10 U
4-Chloroaniline		10 U	10 U	10 U	10 U	10 U
Hexachlorobutadiene		10 U	10 U	10 U	10 U	10 U
4-Chloro-3-methylphenol		10 U	75 %	74 %	10 U	71 %
2-Methylnaphthalene		10 U	10 U	10 U	10 U	10 U
Hexachlorocyclopentadiene		10 U	10 U	10 U	10 U	10 U

*= Outside of EPA CLP QC limits.

0005005
9613451.2808

Cust ID:	B07L90	B07L90	B07L90	SBLK	SBLK BS
RFW#:	001	001 MS	001 MSD	92LE1881-MB1	92LE1881-MB1
2,4,6-Trichlorophenol	10 U	10 U	10 U	10 U	10 U
2,4,5-Trichlorophenol	26 U	26 U	26 U	25 U	25 U
2-Chloronaphthalene	10 U	10 U	10 U	10 U	10 U
2-Nitroaniline	26 U	26 U	26 U	25 U	25 U
Dimethylphthalate	10 U	10 U	10 U	10 U	10 U
Acenaphthylene	10 U	10 U	10 U	10 U	10 U
2,6-Dinitrotoluene	10 U	10 U	10 U	10 U	10 U
3-Nitroaniline	26 U	26 U	26 U	25 U	25 U
Acenaphthene	10 U	67 %	66 %	10 U	67 %
2,4-Dinitrophenol	26 U	26 U	26 U	25 U	25 U
4-Nitrophenol	26 U	66 %	73 %	25 U	62 %
Dibenzofuran	10 U	10 U	10 U	10 U	10 U
2,4-Dinitrotoluene	10 U	74 %	77 %	10 U	73 %
Diethylphthalate	10 U	10 U	10 U	10 U	10 U
4-Chlorophenyl-phenylether	10 U	10 U	10 U	10 U	10 U
Fluorene	10 U	10 U	10 U	10 U	10 U
4-Nitroaniline	26 U	26 U	26 U	25 U	25 U
4,6-Dinitro-2-methylphenol	26 U	26 U	26 U	25 U	25 U
N-Nitrosodiphenylamine (1)	10 U	10 U	10 U	10 U	10 U
4-Bromophenyl-phenylether	10 U	10 U	10 U	10 U	10 U
Hexachlorobenzene	10 U	10 U	10 U	10 U	10 U
Pentachlorophenol	26 U	99 %	106 * %	25 U	98 %
Phenanthrene	10 U	10 U	10 U	10 U	10 U
Anthracene	10 U	10 U	10 U	10 U	10 U
Carbazole	10 U	10 U	10 U	10 U	10 U
Di-n-butylphthalate	0.7 J	10 U	1 J	10 U	10 U
Fluoranthene	10 U	10 U	10 U	10 U	10 U
Pyrene	10 U	76 %	83 %	10 U	79 %
Butylbenzylphthalate	10 U	10 U	10 U	10 U	10 U
3,3'-Dichlorobenzidine	10 U	10 U	10 U	10 U	10 U
Benzo(a)anthracene	10 U	10 U	10 U	10 U	10 U
Chrysene	10 U	10 U	10 U	10 U	10 U
bis(2-Ethylhexyl)phthalate	0.8 J	10 U	2 J	10 U	10 U
Di-n-octyl phthalate	10 U	10 U	10 U	10 U	10 U
Benzo(b)fluoranthene	10 U	10 U	10 U	10 U	10 U
Benzo(k)fluoranthene	10 U	10 U	10 U	10 U	10 U
Benzo(a)pyrene	10 U	10 U	10 U	10 U	10 U
Indeno(1,2,3-cd)pyrene	10 U	10 U	10 U	10 U	10 U
Dibenz(a,h)anthracene	10 U	10 U	10 U	10 U	10 U
Benzo(g,h,i)perylene	10 U	10 U	10 U	10 U	10 U

(1) - Cannot be separated from Diphenylamine. *= Outside of EPA CLP QC limits.

0050009
9613451.2809

9613451.2810 D000017

ROY F. WESTON, INC.
LIONVILLE ANALYTICAL LABORATORY
ANALYTICAL CASE NARRATIVE

Client: WESTINGHOUSE HANFORD
RFW #: 9211L525

W.O. #: 06168-002-001-9999-00
Date Received: 11-03-92

SEMIVOLATILE

One (1) water sample was collected on 10-30-92.

The sample and its associated QC samples were extracted on 11-05-92 and analyzed according to criteria set forth in CLP SOW 03/90 for TCL Semivolatile target compounds on 11-10-92.

The following is a summary of the QC results accompanying these sample results and a description of any problems encountered during their analyses:

1. Non-target compounds were detected in these samples.

2. All surrogate recoveries were within EPA QC limits.

3. One (1) of twenty-two (22) matrix spike recoveries was outside EPA QC limits.

4. All blank spike recoveries were within EPA QC limits.

5. All internal standard area and retention time criteria were met.

Margaret M. Beatyfox

J. Peter Hershey, Ph.D.
Laboratory Manager
Lionville Analytical Laboratory

11/23/92
Date

kls/11-525b.cn

1B

0 0 0 0 0 2 4 CLIENT SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

B07L90

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-0

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) WATER — Lab Sample ID: 9211L525-001

Sample wt/vol: 990 (g/mL) ML — Lab File ID: J111006

Level: (low/med) LOW — Date Received: 11/03/92

% Moisture: _____ decanted: (Y/N)__ — Date Extracted: 11/05/92

Concentrated Extract Volume: 1000(uL) — Date Analyzed: 11/10/92

Injection Volume: 2.0(uL) — Dilution Factor: 1.00

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L	Q
108-95-2	Phenol	10	U
111-44-4	bis(2-Chloroethyl)ether	10	U
95-57-8	2-Chlorophenol	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
95-50-1	1,2-Dichlorobenzene	10	U
95-48-7	2-Methylphenol	10	U
108-60-1	2,2'-oxybis(2-Chloropropane)	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-di-n-propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
111-91-1	bis(2-Chloroethoxy)methane	10	U
120-83-2	2,4-Dichlorophenol	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
59-50-7	4-Chloro-3-methylphenol	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	26	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	26	U
131-11-3	Dimethylphthalate	10	U
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U
99-09-2	3-Nitroaniline	26	U
83-32-9	Acenaphthene	10	U

9613451.2812

1C

0000025 CLIENT SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

B07L90

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-0

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) WATER

Lab Sample ID: 9211L525-001

Sample wt/vol: 990 (g/mL) ML

Lab File ID: J111006

Level: (low/med) LOW

Date Received: 11/03/92

% Moisture: _____ decanted: (Y/N)__

Date Extracted: 11/05/92

Concentrated Extract Volume: 1000(uL)

Date Analyzed: 11/10/92

Injection Volume: 2.0(uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L	Q
51-28-5	2,4-Dinitrophenol	26	U
100-02-7	4-Nitrophenol	26	U
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
86-73-7	Fluorene	10	U
100-01-6	4-Nitroaniline	26	U
534-52-1	4,6-Dinitro-2-methylphenol	26	U
86-30-6	N-Nitrosodiphenylamine (1)	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
87-86-5	Pentachlorophenol	26	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
86-74-8	Carbazole	10	U
84-74-2	Di-n-butylphthalate	0.7	J
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	10	U
56-55-3	Benzo(a)anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	bis(2-Ethylhexyl)phthalate	0.8	J
117-84-0	Di-n-octyl phthalate	10	U
205-99-2	Benzo(b)fluoranthene	10	U
207-08-9	Benzo(k)fluoranthene	10	U
50-32-8	Benzo(a)pyrene	10	U
193-39-5	Indeno(1,2,3-cd)pyrene	10	U
53-70-3	Dibenz(a,h)anthracene	10	U
191-24-2	Benzo(g,h,i)perylene	10	U

(1) - Cannot be separated from Diphenylamine

9613451.2813

1F

B00026 CLIENT SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

B07L90

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-0

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) WATER

Lab Sample ID: 9211L525-001

Sample wt/vol: 990 (g/mL) ML

Lab File ID: J111006

Level: (low/med) LOW

Date Received: 11/03/92

% Moisture: _____ decanted: (Y/N)__

Date Extracted: 11/05/92

Concentrated Extract Volume: 1000(uL)

Date Analyzed: 11/10/92

Injection Volume: 2.0(uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) N

pH: 7.0

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				

Roy F. Weston, Inc. - Lionville Laboratory
Pesticide/PCBs by GC, CLP List
Report Date: 12/07/92 21:51

RFW Batch Number: 9211L525 Client: WESTINGHOUSE HANFORD Work Order: 06168-002-001-9999-00 Page: 1

	Cust ID:	B07L90	B07L90	B07L90	B07L90	B07L90	B07L90
Sample Information	RFW#:	001	001	001 MS	001 MS	001 MSD	001 MSD
	Matrix:	WATER	WATER	WATER	WATER	WATER	WATER
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	ug/L	ug/L CONFIRM	ug/L	ug/L CONFIRM	ug/L	ug/L CONFIRM
Surrogate:	Tetrachloro-m-xylene	55 * %	50 * %	60 %	50 * %	50 * %	45 * %
Surrogate:	Decachlorobiphenyl	50 * %	55 * %	55 * %	55 * %	50 * %	50 * %
		fl	fl	fl	fl	fl	fl
Alpha-BHC		0.050 U	NA	0.10 U	NA	0.10 U	NA
Beta-BHC		0.050 U	NA	0.10 U	NA	0.10 U	NA
Delta-BHC		0.050 U	NA	0.10 U	NA	0.10 U	NA
gamma-BHC (Lindane)		0.050 U	NA	60 %	60 %	60 %	60 %
Heptachlor		0.050 U	NA	56 %	56 %	52 %	52 %
Aldrin		0.070 B	0.050 U	47 %	54 %	47 %	48 %
Heptachlor epoxide		0.050 U	NA	0.10 U	NA	0.10 U	NA
Endosulfan I		0.050 U	NA	0.10 U	NA	0.10 U	NA
Dieldrin		0.10 U	NA	65 %	64 %	65 %	63 %
4,4'-DDE		0.10 U	NA	0.20 U	NA	0.20 U	NA
Endrin		0.10 U	NA	70 %	62 %	70 %	62 %
Endosulfan II		0.10 U	NA	0.20 U	NA	0.20 U	NA
4,4'-DDD		0.10 U	NA	0.20 U	NA	0.20 U	NA
Endosulfan sulfate		0.10 U	NA	0.20 U	NA	0.20 U	NA
4,4'-DDT		0.10 U	NA	66 %	66 %	64 %	62 %
Methoxychlor		0.50 U	NA	1.0 U	NA	1.0 U	NA
Endrin ketone		0.10 U	NA	0.20 U	NA	0.20 U	NA
Endrin aldehyde		0.10 U	NA	0.20 U	NA	0.20 U	NA
alpha-Chlordane		0.050 U	NA	0.10 U	NA	0.10 U	NA
gamma-Chlordane		0.050 U	NA	0.10 U	NA	0.10 U	NA
Toxaphene		5.0 U	NA	10 U	NA	10 U	NA
Aroclor-1016		1.0 U	NA	2.0 U	NA	2.0 U	NA
Aroclor-1221		2.0 U	NA	4.0 U	NA	4.0 U	NA
Aroclor-1232		1.0 U	NA	2.0 U	NA	2.0 U	NA
Aroclor-1242		1.0 U	NA	2.0 U	NA	2.0 U	NA
Aroclor-1248		1.0 U	NA	2.0 U	NA	2.0 U	NA
Aroclor-1254		1.0 U	NA	2.0 U	NA	2.0 U	NA
Aroclor-1260		1.0 U	NA	2.0 U	NA	2.0 U	NA

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not requested. NS= Not spiked.
%= Percent recovery. Z= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

0 0 0 0 0 8
9213451.2814

WESTON MANAGERS DESIGNERS CONSULTANTS

ROY F. WESTON, INC.
LIONVILLE ANALYTICAL LABORATORY
ANALYTICAL CASE NARRATIVE

Client: WESTINGHOUSE HANFORD
RFW #: 9211L525

W.O. #: 06168-002-001-9999-00
Date Received: 11-03-92

PESTICIDE/PCB

One (1) water sample was collected on 10-30-92.

The sample and its associated QC samples were extracted on 11-04-92 and analyzed according to criteria set forth in the Contract Laboratory Program 03/90 SOW for Pesticide and PCB target compounds on 11-10-92.

The following is a summary of the QC results accompanying the sample results and a description of any problems encountered during their analyses:

1. Linearity and breakdown criteria were met for each of the analytical columns.

2. Retention time criteria were met for all compounds on both analytical columns.

3. Resolution of all pesticides in the Resolution Check Standard were within EPA QC limits.

4. The RPDs of the pesticides in the individual mixes analyzed for calibration verification were within 25% for both analytical columns.

5. The RPDs of the pesticides in the Performance Evaluation Mixes analyzed for calibration verification were within 25% for both analytical columns.

6. Seventeen (17) of twenty (20) surrogate recoveries were outside the EPA QC limits. The following surrogate recoveries were outside the EPA QC limits of 60%-150%.

	% Recoveries			
Sample ID	TCX1	TCX2	DCB1	DCB2
B07L90	55	50	50	55
B07L90 MS	-	50	55	55
B07L90 MSD	50	45	50	50
92LE1878-MB1	-	50	35	35
92LE1878-MB1 BS	-	55	30	30

WESTON MANAGERS DESIGNERS CONSULTANTS

7. All blank spike recoveries were within EPA QC limits.

8. All matrix spike recoveries were within EPA QC limits.

9. Recoveries of pesticides for the Florisil Cartridge Check were within EPA QC limits.

Margaret M. Brady for

J. Peter Hershey, Ph.D.
Laboratory Manager
Lionville Analytical Laboratory

1/8/93
Date

sma/pcb/11-525pp.cn

9613451.2817
ID

0 0 0 0 0 2 2 CLIENT SAMPLE NO.

PESTICIDE ORGANICS ANALYSIS DATA SHEET

B07L90

Lab Name: Roy F. Weston, Inc. Work Order: 06168-002-001-9999-00

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) WATER

Lab Sample ID: 9211L525-001

Sample wt/vol: 1000 (g/mL) ML

Lab File ID: 11099235.09

% Moisture: decanted: (Y/N)_

Date Received: 11/03/92

Extraction: (SepF/Cont/Sonc) CONT

Date Extracted: 11/04/92

Concentrated Extract Volume: 10000.00(uL)

Date Analyzed: 11/10/92

Injection Volume: 0.5(uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) N pH: 7.0

Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L	Q
319-84-6	Alpha-BHC	0.050	U
319-85-7	Beta-BHC	0.050	U
319-86-8	Delta-BHC	0.050	U
58-89-9	gamma-BHC (Lindane)	0.050	U
76-44-8	Heptachlor	0.050	U
309-00-2	Aldrin	0.050	U
1024-57-3	Heptachlor epoxide	0.050	U
959-98-8	Endosulfan I	0.050	U
60-57-1	Dieldrin	0.10	U
72-55-9	4,4'-DDE	0.10	U
72-20-8	Endrin	0.10	U
33213-65-9	Endosulfan II	0.10	U
72-54-8	4,4'-DDD	0.10	U
1031-07-8	Endosulfan sulfate	0.10	U
50-29-3	4,4'-DDT	0.10	U
72-43-5	Methoxychlor	0.50	U
53494-70-5	Endrin ketone	0.10	U
7421934	Endrin aldehyde	0.10	U
5103-71-9	alpha-Chlordane	0.050	U
5103-74-2	gamma-Chlordane	0.050	U
8001-35-2	Toxaphene	5.0	U
12674-11-2	Aroclor-1016	1.0	U
11104-28-2	Aroclor-1221	2.0	U
11141-16-5	Aroclor-1232	1.0	U
53469-21-9	Aroclor-1242	1.0	U
12672-29-6	Aroclor-1248	1.0	U
11097-69-1	Aroclor-1254	1.0	U
11096-82-5	Aroclor-1260	1.0	U

B. M
12/27/92

9613451.2818

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WESTON
MANAGERS DESIGNERS/CONSULTANTS

ROY F. WESTON, INC.
LIONVILLE ANALYTICAL LABORATORY
ANALYTICAL CASE NARRATIVE

Client : WESTINGHOUSE HANFORD
RFW# : 9211L525

W.O. #: 06168-002-001-9999-00
Date Received: 11-03-92

INORGANIC

The following is a summary of the quality control results and a description of any problems encountered during the analysis of this batch of samples:

1. Sample holding times as required by 40CFR136 were met with the exception of Phosphate by IC, pH and Specific Conductance (received past hold) and Total Organic Halides for sample 001 and 001 Dup (analyzed past hold).

2. All preparation blank results were below the required detection limit.

3. All laboratory control standards (blank spikes) were within the control limits of 80-120% (70-130% for Total Organic Halides). All %RPD were within the 20% guidance limit (40% for Total Organic Halides).

4. All calibration verification checks were within the required control limits of 90-110%. Calibration verification is performed using independent standards.

5. Matrix spike recoveries are summarized on the Inorganic Accuracy Report contained within this document. All recoveries were within the 75-125% guidance limits (70-130% for Total Organic Halides). All %RPD were within the 20% guidance limit.

6. Replicate results are summarized on the Inorganic Precision Report contained within this document. All results were within the 20% RPD guidance limit (40% for Total Organic Halides).

7. The analytical methods applied by the laboratory, unless otherwise requested, for all inorganic analyses are derived from the USEPA Method for Chemical Analysis of Water and Wastes (USEPA 600/4-79-020) and Standard Methods for the Examination of Water and Wastewater 16 ed. Methods for the analysis of solid samples are derived from Test Methods for Evaluating Solid Waste (USEPA SW846).

Margaret M. Szatyka

J. Peter Hershey, Ph.D.
Laboratory Manager
Lionville Analytical Laboratory

12/8/92
Date

pas/i11-525

9615451.2819

ROY F. WESTON INC.

INORGANIC DATA SUMMARY REPORT 12/03/92

CLIENT: WESTINGHOUSE HANFORD
WORK ORDER: 06168-002-001-9999-00

WESTON BATCH #: 9211L525

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT
-001	B07L90	Alkalinity	120	MG/L	2.0
		Chloride by IC	5.9	MG/L	0.25
		Fluoride by IC	0.53	MG/L	0.50
		Cyanide, Total	20.0 u	UG/L	20.0
		Chemical Oxygen Demand	5.0 u	MG/L	5.0
		Phosphate by IC	0.25 u	MG/L	0.25
		Sulfate by IC	35.6	MG/L	5.0
		Nitrate Nitrite	0.81	MG-N/L	0.10
		Ammonia, as N	0.10 u	MG/L	0.10
		Total Organic Carbon	0.88	MG/L	0.50
		pH	7.6	PH UNITS	0.010
		Sulfide	0.10 u	MG/L	0.10
		Specific Conductance	306	UMHOS/CM	1.0
		Total Dissolved Solids	222	MG/L	5.0
		Total Organic Halides	25.0 u	UG/L	25.0

9613451.2820 0000009

WESTON
MANAGERS DESIGNERS CONSULTANTS

ROY F. WESTON, INC.
LIONVILLE ANALYTICAL LABORATORY
ANALYTICAL CASE NARRATIVE

Client : WESTINGHOUSE HANFORD
RFW# : 9211L525

W.O. #: 06168-002-001-9999-00
Date Received: 11-03-92

CLP METALS

The set of samples consisted of two (2) water samples collected on 10-30-92.

The samples were analyzed according to criteria set forth in CLP SOW 3/90.

The following is a summary of the QC results accompanying these sample results and a description of any problems encountered during their analysis:

1. ICVs, CCVs, and LCSs stock standards were purchased from Inorganic Ventures Laboratory.

2. All ICV and CCV values were within control limits.

3. All ICB and CCB values were within control limits.

4. All preparation blank values were within control limits.

5. All LCS results were within the 80-120% control limits.

6. All matrix spike recoveries were within the 75-125% control limits.

7. All duplicate analyses were within the 20% RPD control limit.

8. The code CV is currently in use by the laboratory for both mercury instruments in operation (HG1 and HG2). HG1 is complete with autosampler and software, but still requires manual digestion; HG2 is operated by the analyst, produces a strip chart and also requires manual digestion.

9. HG1 requires less total volume of digestate due to the autosampler analysis. Sample volumes and reagents for mercury determinations in water and soil have been proportionally scaled down to adapt to this semi-automated technique. The sample volume used for water analysis is 33 ml. For soils, 0.1 gram of sample is taken to a final volume of 50 ml (including all reagents).

10. Quarterly Detection Limits, ICP Interelement Correction Factors and ICP Linear Ranges for IC3 are included in this package, but do not appear on EDD.

WESTON
MANAGERS ENGINEERS CONSULTANTS

11. The graphite furnace time that appears on form XIV is the time of the first injection. The time that appears on the data is the print time.

J. Peter Hershey, Ph.D.
Laboratory Manager
Lionville Analytical Laboratory

12.31.92
Date

mlj/clp-met.nar

9613451.2822 0000011

ROY F. WESTON, INC.
LIONVILLE ANALYTICAL LABORATORY
ANALYTICAL CASE NARRATIVE

Client: WESTINGHOUSE HANFORD
RFW #: 9211L525

W.O. #: 06168-002-001-9999-00
Date Received: 11-03-92

CLP METALS ADDENDUM

1. Following Exhibit E, Section V, Item 10, page E-23 of the USEPA Statement of Work for Inorganics Analysis, Document Number ILM02.0 ICP Instrument Detection Limits (IDLs) are reported for two (2) ICP instruments. The instrument identification numbers are "IC1" and "IC3". The highest IDL for the two instruments is used for reporting concentration values in this sample data package.

2. A discrepancy exists between raw data and Form XIVs analytical spikes recovery calculations performed for graphite furnace AA analytes. Instrument software calculates spike recoveries based on absolute values below the IDL for sample results. This is hard-coded by the vendor and is currently not correctable. CLP convention (SOW ILM02.0, Exhibit E, Section V, Item 6, page E-20) requires that when values fall below the IDL, the sample result is equal to zero (0) for the purposes of calculating the percent recovery. The Form XIVs contain the correct calculation.

J. Peter Hershey, Ph.D.
Laboratory Manager
Lionville Analytical Laboratory

12.31.92
Date

mlj\clp-met.nar

ROY F. WESTON INC.

INORGANIC DATA SUMMARY REPORT 12/26/92

CLIENT: WESTINGHOUSE HANFORD
WORK ORDER: 06168-002-001-9999-00

WESTON BATCH #: 9211L525

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT
-001	B07L90	Silver, Total	10.0	u	UG/L	10.0
		Aluminum, Total	200	u	UG/L	200
		Arsenic, Total	10.0	u	UG/L	10.0
		Barium, Total	200	u	UG/L	200
		Beryllium, Total	5.0	u	UG/L	5.0
		Calcium, Total	27900		UG/L	5000
		Cadmium, Total	5.0	u	UG/L	5.0
		Cobalt, Total	50.0	u	UG/L	50.0
		Chromium, Total	41.5		UG/L	10.0
		Copper, Total	25.0	u	UG/L	25.0
		Iron, Total	321		UG/L	100
		Mercury, Total	0.20	u	UG/L	0.20
		Potassium, Total	5000	u	UG/L	5000
		Magnesium, Total	8510		UG/L	5000
		Manganese, Total	15.0	u	UG/L	15.0
		Sodium, Total	17300		UG/L	5000
		Nickel, Total	40.0	u	UG/L	40.0
		Lead, Total	3.0	u	UG/L	3.0
		Antimony, Total	60.0	u	UG/L	60.0
		Selenium, Total	5.0	u	UG/L	5.0
		Thallium, Total	10.0	u	UG/L	10.0
		Vanadium, Total	50.0	u	UG/L	50.0
		Zinc, Total	20.0	u	UG/L	20.0

ROY F. WESTON INC.

INORGANIC DATA SUMMARY REPORT 12/26/92

CLIENT: WESTINGHOUSE HANFORD
WORK ORDER: 06168-002-001-9999-00

WESTON BATCH #: 9211L525

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT
-002	B07L92	Silver, Soluble	10.0	u	UG/L	10.0
		Aluminum, Soluble	200	u	UG/L	200
		Arsenic, Soluble	10.0	u	UG/L	10.0
		Barium, Soluble	200	u	UG/L	200
		Beryllium, Soluble	5.0	u	UG/L	5.0
		Calcium, Soluble	28500		UG/L	5000
		Cadmium, Soluble	5.0	u	UG/L	5.0
		Cobalt, Soluble	50.0	u	UG/L	50.0
		Chromium, Soluble	20.0		UG/L	10.0
		Copper, Soluble	25.0	u	UG/L	25.0
		Iron, Soluble	100	u	UG/L	100
		Mercury, Soluble	0.20	u	UG/L	0.20
		Potassium, Soluble	5000	u	UG/L	5000
		Magnesium, Soluble	8690		UG/L	5000
		Manganese, Soluble	15.0	u	UG/L	15.0
		Sodium, Soluble	17600		UG/L	5000
		Nickel, Soluble	40.0	u	UG/L	40.0
		Lead, Soluble	3.0	u	UG/L	3.0
		Antimony, Soluble	60.0	u	UG/L	60.0
		Selenium, Soluble	5.0	u	UG/L	5.0
		Thallium, Soluble	10.0	u	UG/L	10.0
		Vanadium, Soluble	50.0	u	UG/L	50.0
		Zinc, Soluble	20.0	u	UG/L	20.0

U.S. EPA - CLP

EPA SAMPLE NO.

1

INORGANIC ANALYSIS DATA SHEET

B07L90

Lab Name: ROY F. WESTON, INC - L372 Contract: 6168-02-01

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP525

Matrix (soil/water): WATER Lab Sample ID: 921152501

Level (low/med): LOW Date Received: 11/03/92

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	103.00	B		P
7440-36-0	Antimony	60.00	U		P
7440-38-2	Arsenic	3.60	B		F
7440-39-3	Barium	39.40	B		P
7440-41-7	Beryllium	1.00	U		P
7440-43-9	Cadmium	7.00	U		P
7440-70-2	Calcium	27900.00			P
7440-47-3	Chromium	41.50			P
7440-48-4	Cobalt	9.00	U		P
7440-50-8	Copper	8.00	U		P
7439-89-6	Iron	321.00			P
7439-92-1	Lead	2.00	U	W	F
7439-95-4	Magnesium	8510.00			P
7439-96-5	Manganese	6.50	B		P
7439-97-6	Mercury	.10	U		CV
7440-02-0	Nickel	20.00	U		P
7440-09-7	Potassium	4250.00	B		P
7782-49-2	Selenium	2.00	U	W	F
7440-22-4	Silver	10.00	U		P
7440-23-5	Sodium	17300.00			P
7440-28-0	Thallium	2.00	U		F
7440-62-2	Vanadium	8.70	B		P
7440-66-6	Zinc	12.40	B		P
	Cyanide	20.00	U		C

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

U.S. EPA - CLP

EPA SAMPLE NO.

1

INORGANIC ANALYSIS DATA SHEET

B07L92

Lab Name: ROY F. WESTON, INC - L372 Contract: 6168-02-01

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP525

Matrix (soil/water): WATER Lab Sample ID: 921152502

Level (low/med): LOW Date Received: 11/03/92

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	49.00	U		P
7440-36-0	Antimony	60.00	U		P
7440-38-2	Arsenic	4.70	B		F
7440-39-3	Barium	38.00	B		P
7440-41-7	Beryllium	1.00	U		P
7440-43-9	Cadmium	7.00	U		P
7440-70-2	Calcium	28500.00			P
7440-47-3	Chromium	20.00			P
7440-48-4	Cobalt	9.00	U		P
7440-50-8	Copper	8.00	U		P
7439-89-6	Iron	15.00	U		P
7439-92-1	Lead	2.00	U	W	F
7439-95-4	Magnesium	8690.00			P
7439-96-5	Manganese	4.00	U		P
7439-97-6	Mercury	.10	U		CV
7440-02-0	Nickel	20.00	U		P
7440-09-7	Potassium	4820.00	B		P
7782-49-2	Selenium	2.00	U	W	F
7440-22-4	Silver	10.00	U		P
7440-23-5	Sodium	17600.00			P
7440-28-0	Thallium	2.00	U		F
7440-62-2	Vanadium	8.00	U		P
7440-66-6	Zinc	7.00	U		P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

9613451.2827 0000003 9211L525-WES-926

Westinghouse Hanford Company

CHAIN OF CUSTODY

Custody Form Initiator PH BUTCHER

Company Contact PH BUTCHER

Telephone (509)376-5045

Project Designation/Sampling Locations 100-HR-3

Collection Date 10-30-92

Ice Chest No. 5ML-116

Field Logbook No. EFL-0057

Bill of Lading/Airbill No. 251900653 4

Offsite Property No. W92- W93-0-0059

AJS 11/2/92

Method of Shipment EMERY

Shipped to WESTON

Possible Sample Hazards/Remarks N/A

9211L 525

Sample Identification

BO 7<90

1, 1L, P, WATER, CLP-ICP/AA METALS & Hg (HNO3) UNFILTERED
1, 1L, P, WATER, CLP-CYANIDE (NaOH)
3, 40ml, Gs, WATER, CLP-VOA
3, 2L, aG, WATER, CLP-SEMI-VOA & PCB/PEST
1, 500ml, P, WATER, ANIONS(IC) (SO4,F,PO4,Cl), COND., pH
1,4L 1,2L 3 → ~~2, 4L~~, P, WATER, GROSS ALPHA/BETA, GAMMA SPEC, ALPHA SPEC (U-235/238,Pu-239/240, Am-241), Sr-90 (HNO3)
2,250ml ~~1, 500ml~~, Gs, WATER, TRITIUM, C-14
~~1, 250ml, P,~~ WATER, NO2,NO3 (H2SO4)
1, 500ml, G, WATER, ALKALINITY, TOTAL DISSOLVED SOLIDS
1,500ml, 6s 1, 1L, P, WATER, SULFIDE (ZINC ACETATE+NaOH pH>9)
1, 500ml, G, WATER, AMMONIA, CHEMICAL OXYGEN DEMAND (H2SO4 pH<2)
1, 1L, P, WATER, Tc-99 (HCl)
1, 125ml, aG, WATER, TOC (H2SO4)
1, 250ml, aG, WATER, TOX (H2SO4)

BO 7<92

1, 1L, P, WATER, CLP-ICP/AA METALS & Hg (HNO3) FILTERED

BO 7<95

3, 40ml, Gs, WATER, CLP-VOA

[] Field Transfer of Custody	Chain of Possession	(Sign and Print Names)
Relinquished by:	Received by: Refrig. #1	Date/Time: 10-30-92 / 1530
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time: 11/3/92 1439hrs
Relinquished by:	Received by:	Date/Time:

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments:

9613451.2828 0000004

Westinghouse Hanford Company

SAMPLE ANALYSIS REQUEST

PART I: FIELD SECTION

Collecto K. Lee, L. Walker Date Sampled 10-30-92 Time 1230 hours

Company P. H. Butcher Telephone (509) 376-5045

Sample Number	Number and Type of Sample	Type of Sample*	Analysis Requested
BO 7690	1; 1L; P;	WATER	CLP ICP/AA METALS & Hg (HNO3) UNFILTERED
	1; 1L; P	WATER	CLP-CYANIDE (NaOH)
	3; 40ml; Gs	WATER	CLP-VOA
	2; 2L; aG	WATER	CLP-SEMI-VOA & PCB/PEST
	1; 1L; P	WATER	ANIONS(IC)(SO4,F,PO4,Cl); CONDUCTIVITY; pH
1,4L 1,2L	~~2; 4L;~~ P	WATER	GROSS ALPHA/BETA;GAMMA SPEC;ALPHA SPEC
	LW 10-30-92		(U-235/238,Pu-239/240,Am-241); Sr-90 (HNO3)
	2 250ml ~~1; 500ml; G~~	WATER	TRITIUM, C-14
	1; 500ml; P;	WATER	ANIONS(NO2/NO3) (H2SO4)
	1; 1L; G;	WATER	ALKALINITY; TOTAL DISSOLVED SOLIDS
	1; 500ml; G;	WATER	SULFIDE (ZINC ACETATE + NaOH pH>9)
	1; 500ml; G;	WATER	AMMONIA; CHEMICAL OXYGEN DEMAND(H2SO4 pH<
↓	1; 1L; P;	WATER	Tc-99 (HCL)
BO	1; 125ml; aGs;	WATER	TOC (H2SO4)
↓	1; 250ml; aGs;	WATER	TOX (H2SO4)
BO 7612	1; 1L; P;	WATER	CLP-ICP/AA METAL & Hg (HNO3) FILTERED
BO 7613	3; 40ml; Gs;	WATER	CLP-VOA
			OPC: # W93-0-0059-13
			BOL: # 251900653U
			TASK: 92-360

Field

Specia Handling and/or

Possible Sample

PART II: LABORATORY SECTION

Received Bruce E Shaffer Titl UNIT Leader Date 11/3/92 1430

Analysis

*Indicate whether sample is soil, sludge, water, etc.

**Use back of page for additional information relative to sample location.

A-6000-406(05/

9613451.2829 0000025 X0200-

IA

VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO. B07L90

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-0

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) WATER

Lab Sample ID: 9211L525-001

Sample wt/vol: 5.00 (g/mL) ML

Lab File ID: B110615

Level: (low/med) LOW

Date Received: 11/03/92

% Moisture: not dec.

Date Analyzed: 11/06/92

GC Column: DB624 ID: .53(mm)

Dilution Factor: 1.00

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	10 5	7B U
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	10	U
75-35-4	1,1-Dichloroethene	10	U
75-34-3	1,1-Dichloroethane	10	U
540-59-0	1,2-Dichloroethene (total)	10	U
67-66-3	Chloroform	10	U
107-06-2	1,2-Dichloroethane	10	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	10	U
56-23-5	Carbon Tetrachloride	10	U
75-27-4	Bromodichloromethane	10	U
78-87-5	1,2-Dichloropropane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
79-01-6	Trichloroethene	10	U
124-48-1	Dibromochloromethane	10	U
79-00-5	1,1,2-Trichloroethane	10	U
71-43-2	Benzene	10	U
10061-02-6	trans-1,3-Dichloropropene	10	U
75-25-2	Bromoform	10	U
108-10-1	4-Methyl-2-pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	10	U
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	10	U
100-42-5	Styrene	10	U
1330-20-7	Xylene (total)	10	U

4-26-93B

PD 5/24/93

9613451.2830

0000026

1E

CLIENT SAMPLE NO.

B07L90

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-0

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) WATER

Lab Sample ID: 9211L525-001

Sample wt/vol: 5.00 (g/mL) ML

Lab File ID: B110615

Level: (low/med) LOW

Date Received: 11/03/92

% Moisture: not dec.

Date Analyzed: 11/06/92

GC Column: DB624 ID: .53(mm)

Dilution Factor: 1.00

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				

4-26-93 SC

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

B07L93 ✓

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-0

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) WATER

Lab Sample ID: 9211L525-003

Sample wt/vol: 5.00 (g/mL) ML

Lab File ID: B110616 ✓

Level: (low/med) LOW

Date Received: 11/03/92

% Moisture: not dec.

Date Analyzed: 11/06/92

GC Column: DB624 ID: .53(mm)

Dilution Factor: 1.00

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	5	JB
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	10	U
75-35-4	1,1-Dichloroethene	10	U
75-34-3	1,1-Dichloroethane	10	U
540-59-0	1,2-Dichloroethene (total)	10	U
67-66-3	Chloroform	10	U
107-06-2	1,2-Dichloroethane	10	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	10	U
56-23-5	Carbon Tetrachloride	10	U
75-27-4	Bromodichloromethane	10	U
78-87-5	1,2-Dichloropropane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
79-01-6	Trichloroethene	10	U
124-48-1	Dibromochloromethane	10	U
79-00-5	1,1,2-Trichloroethane	10	U
71-43-2	Benzene	10	U
10061-02-6	trans-1,3-Dichloropropene	10	U
75-25-2	Bromoform	10	U
108-10-1	4-Methyl-2-pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	10	U
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	10	U
100-42-5	Styrene	10	U
1330-20-7	Xylene (total)	10	U

4-26-93 SL

RD 5/24/93

1E

CLIENT SAMPLE NO.

B07L93

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-0

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) WATER

Lab Sample ID: 9211L525-003

Sample wt/vol: 5.00 (g/mL) ML

Lab File ID: B110616

Level: (low/med) LOW

Date Received: 11/03/92

% Moisture: not dec.

Date Analyzed: 11/06/92

GC Column: DB624 ID: .53(mm)

Dilution Factor: 1.00

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.					

4-26-93 SC

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

B07L90

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-0

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) WATER — Lab Sample ID: 9211L525-001

Sample wt/vol: 990 (g/mL) ML — Lab File ID: J111006

Level: (low/med) LOW — Date Received: 11/03/92

% Moisture: _____ decanted: (Y/N)__ — Date Extracted: 11/05/92

Concentrated Extract Volume: 1000(uL) — Date Analyzed: 11/10/92

Injection Volume: 2.0(uL) — Dilution Factor: 1.00

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L	Q
108-95-2	Phenol	10	U
111-44-4	bis(2-Chloroethyl)ether	10	U
95-57-8	2-Chlorophenol	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
95-50-1	1,2-Dichlorobenzene	10	U
95-48-7	2-Methylphenol	10	U
108-60-1	2,2'-oxybis(2-Chloropropane)	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-di-n-propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
111-91-1	bis(2-Chloroethoxy)methane	10	U
120-83-2	2,4-Dichlorophenol	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
59-50-7	4-Chloro-3-methylphenol	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	26	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	26	U
131-11-3	Dimethylphthalate	10	U
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U
99-09-2	3-Nitroaniline	26	U
83-32-9	Acenaphthene	10	U

4-26-93 SC

5/24/93

9613451.2834

1C

0 0 0 0 2 5 CLIENT SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

B07L90

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-0

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) WATER Lab Sample ID: 9211L525-001

Sample wt/vol: 990 (g/mL) ML Lab File ID: J111006

Level: (low/med) LOW Date Received: 11/03/92

% Moisture: _____ decanted: (Y/N)__ Date Extracted: 11/05/92

Concentrated Extract Volume: 1000(uL) Date Analyzed: 11/10/92

Injection Volume: 2.0(uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L	Q
51-28-5	2,4-Dinitrophenol	26	U
100-02-7	4-Nitrophenol	26	U
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
86-73-7	Fluorene	10	U
100-01-6	4-Nitroaniline	26	U
534-52-1	4,6-Dinitro-2-methylphenol	26	U
86-30-6	N-Nitrosodiphenylamine (1)	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
87-86-5	Pentachlorophenol	26	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
86-74-8	Carbazole	10	U
84-74-2	Di-n-butylphthalate	0.7	J
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	10	U
56-55-3	Benzo(a)anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	bis(2-Ethylhexyl)phthalate	0.8	J
117-84-0	Di-n-octyl phthalate	10	U
205-99-2	Benzo(b)fluoranthene	10	U
207-08-9	Benzo(k)fluoranthene	10	U
50-32-8	Benzo(a)pyrene	10	U
193-39-5	Indeno(1,2,3-cd)pyrene	10	U
53-70-3	Dibenz(a,h)anthracene	10	U
191-24-2	Benzo(g,h,i)perylene	10	U

(1) - Cannot be separated from Diphenylamine

4-26-93 S

9613451.2835

1F

B0B0B2B CLIENT SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

B07L90

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-0

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) WATER

Lab Sample ID: 9211L525-001

Sample wt/vol: 990 (g/mL) ML

Lab File ID: J111006

Level: (low/med) LOW

Date Received: 11/03/92

% Moisture: _____ decanted: (Y/N)__

Date Extracted: 11/05/92

Concentrated Extract Volume: 1000(uL)

Date Analyzed: 11/10/92

Injection Volume: 2.0(uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) N

pH: 7.0

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				

4-26-93 SC

9613451.2836 ID 0000022 CLIENT SAMPLE NO.

PESTICIDE ORGANICS ANALYSIS DATA SHEET

B07L90

Lab Name: Roy F. Weston, Inc. Work Order: 06168-002-001-9999-00

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) WATER — Lab Sample ID: 9211L525-001

Sample wt/vol: 1000 (g/mL) ML — Lab File ID: 11099235.09

% Moisture: decanted: (Y/N)_ — Date Received: 11/03/92

Extraction: (SepF/Cont/Sonc) CONT — Date Extracted: 11/04/92

Concentrated Extract Volume: 10000.00(uL) — Date Analyzed: 11/10/92

Injection Volume: 0.5(uL) — Dilution Factor: 1.00

GPC Cleanup: (Y/N) N pH: 7.0 — Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L	Q
319-84-6	Alpha-BHC	0.050	UJ
319-85-7	Beta-BHC	0.050	U
319-86-8	Delta-BHC	0.050	U
58-89-9	gamma-BHC (Lindane)	0.050	U
76-44-8	Heptachlor	0.050	U
309-00-2	Aldrin	0.050	U
1024-57-3	Heptachlor epoxide	0.050	U
959-98-8	Endosulfan I	0.050	U
60-57-1	Dieldrin	0.10	U
72-55-9	4,4'-DDE	0.10	U
72-20-8	Endrin	0.10	U
33213-65-9	Endosulfan II	0.10	U
72-54-8	4,4'-DDD	0.10	U
1031-07-8	Endosulfan sulfate	0.10	U
50-29-3	4,4'-DDT	0.10	U
72-43-5	Methoxychlor	0.50	U
53494-70-5	Endrin ketone	0.10	U
7421934	Endrin aldehyde	0.10	U
5103-71-9	alpha-Chlordane	0.050	U
5103-74-2	gamma-Chlordane	0.050	U
8001-35-2	Toxaphene	5.0	U
12674-11-2	Aroclor-1016	1.0	U
11104-28-2	Aroclor-1221	2.0	U
11141-16-5	Aroclor-1232	1.0	U
53469-21-9	Aroclor-1242	1.0	U
12672-29-6	Aroclor-1248	1.0	U
11097-69-1	Aroclor-1254	1.0	U
11096-82-5	Aroclor-1260	1.0	U

4-26-93 SC

B. M 12/27/92

FORM 1 PEST 03/90

5/24/93

U.S. EPA - CLP

EPA SAMPLE NO.

1

INORGANIC ANALYSIS DATA SHEET

B07L90

Lab Name: ROY F. WESTON, INC - L372 Contract: 6168-02-01

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP525

Matrix (soil/water): WATER Lab Sample ID: 921152501

Level (low/med): LOW Date Received: 11/03/92

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	103.00	B	U	P
7440-36-0	Antimony	60.00	U	U	P
7440-38-2	Arsenic	3.60	B	U	F
7440-39-3	Barium	39.40	B	U	P
7440-41-7	Beryllium	1.00	U		P
7440-43-9	Cadmium	7.00	U		P
7440-70-2	Calcium	27900.00			P
7440-47-3	Chromium	41.50		U	P
7440-48-4	Cobalt	9.00	U	U	P
7440-50-8	Copper	8.00	U		P
7439-89-6	Iron	321.00			P
7439-92-1	Lead	2.00	U	W J	F
7439-95-4	Magnesium	8510.00			P
7439-96-5	Manganese	6.50	B	U	P
7439-97-6	Mercury	.10	U		CV
7440-02-0	Nickel	20.00	U		P
7440-09-7	Potassium	4250.00	B	U	P
7782-49-2	Selenium	2.00	U	W J	F
7440-22-4	Silver	10.00	U		P
7440-23-5	Sodium	17300.00			P
7440-28-0	Thallium	2.00	U		F
7440-62-2	Vanadium	8.70	B	U	P
7440-66-6	Zinc	12.40	B	U	P
	Cyanide	20.00	U		C

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

4-26-93 SC

FORM I - IN 03/90

PBD 3/24/93

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

B07L92

Lab Name: ROY F. WESTON, INC - L372 Contract: 6168-02-01

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP525

Matrix (soil/water): WATER Lab Sample ID: 921152502

Level (low/med): LOW Date Received: 11/03/92

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	49.00	U		P
7440-36-0	Antimony	60.00	U		P
7440-38-2	Arsenic	4.70	B	U	F
7440-39-3	Barium	38.00	B	U	P
7440-41-7	Beryllium	1.00	U		P
7440-43-9	Cadmium	7.00	U		P
7440-70-2	Calcium	28500.00			P
7440-47-3	Chromium	20.00		U	P
7440-48-4	Cobalt	9.00	U		P
7440-50-8	Copper	8.00	U		P
7439-89-6	Iron	15.00	U		P
7439-92-1	Lead	2.00	U	W J	F
7439-95-4	Magnesium	8690.00			P
7439-96-5	Manganese	4.00	U		P
7439-97-6	Mercury	.10	U		CV
7440-02-0	Nickel	20.00	U		P
7440-09-7	Potassium	4820.00	B	U	P
7782-49-2	Selenium	2.00	U	W J	F
7440-22-4	Silver	10.00	U		P
7440-23-5	Sodium	17600.00			P
7440-28-0	Thallium	2.00	U		F
7440-62-2	Vanadium	8.00	U		P
7440-66-6	Zinc	7.00	U		P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

4-26-93 SC

PSJ 5/24/93

ROY F. WESTON INC.

INORGANIC DATA SUMMARY REPORT 12/03/92

CLIENT: WESTINGHOUSE HANFORD
WORK ORDER: 06168-002-001-9999-00

WESTON BATCH #: 9211L525

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT
-001	B07L90	Alkalinity	120	MG/L	2.0
		Chloride by IC	5.9	MG/L	0.25
		Fluoride by IC	0.53	MG/L	0.50
		~~Cyanide, Total~~	20.0 u	UG/L	~~20.0~~
		Chemical Oxygen Demand	5.0 u	MG/L	5.0
		Phosphate by IC	0.25 uJ	MG/L	0.25
		Sulfate by IC	35.6	MG/L	5.0
		Nitrate Nitrite	0.81	MG-N/L	0.10
		Ammonia, as N	0.10 u	MG/L	0.10
		Total Organic Carbon	0.88	MG/L	0.50
		pH	7.6 J	PH UNITS	0.010
		Sulfide	0.10 uJ	MG/L	0.10
		Specific Conductance	306 J	UMHOS/CM	1.0
		Total Dissolved Solids	222	MG/L	5.0
		Total Organic Halides	25.0 uR	UG/L	25.0

4/26/93 SC

BJ 5/24/93

VOLATILE ORGANIC DATA VALIDATION CHECKLIST - FORM A-1

PROJECT: Westinghouse-Hanford	REVIEWER: SC	DATE: 4-26-93
LABORATORY: Roy F. Weston	CASE:	SDG: H B07L90
SAMPLES/MATRIX: soil QC water		
B07L90, B07L93		

1. DATA PACKAGE COMPLETENESS

Review the data package for completeness and check off the items below. If any data review elements are missing contact the laboratory for submittal.

Data Package Item	Present?:	Yes	No	N/A
Case Narrative	✓	—	—	
Data Summary	✓	✓	—	
Chain-of-Custody	—	✓	—	—
QC Summary				
Surrogate report		✓	—	—
MS/MSD report	✓	✓	—	—
Blank summary report	—	—	—	
GC/MS tuning report	✓	—	—	
Internal standard summary report		✓	—	—
Sample Data				
Sample reports	✓	—	—	
TIC reports for each sample		✓	—	—
RIC reports for all samples		—	—	✓
Raw and corrected spectra for all detected results		✓	—	—
Raw and corrected library search data for all reported TIC	—	—	✓	
Quantitation and calculation data for all TIC	—	—	✓	
Standards Data				
Initial calibration report		✓	—	—
RIC and quantitation reports for initial calibration	✓	✓	—	—
Continuing calibration reports	—	✓	—	
RIC and quantitation reports for cont. calibrations		✓	—	—
Internal standard summary report		✓	—	—
Raw QC Data				
Tuning report, spectra and mass lists	✓	—	—	
Blank analysis reports	✓	—	—	
TIC reports for all blanks		✓	—	✓
RIC and quantitation reports for blanks		✓	—	—
Raw and corrected spectra for all detected results in blanks	✓	—	✓	
Raw and corrected library search data for all reported TIC	—	—	✓	

Data Package Item	Present?:	Yes	No	N/A
Quantitation and calculation data for all TIC	—	—	✓	
MS/MSD report forms	✓	—	—	
RIC and quantitation reports for MS/MSD		—	—	—
Additional Data				
Moisture/% solids data sheets	—	—	✓	
Reduction formulae		—	✓	—
Instrument time logs		✓	—	—
Chemist notebook pages		✓	—	—
Sample preparation sheets		✓	—	—

2. HOLDING TIMES

Complete the holding time summary form listing all samples and dates of collection and analysis.

Were all samples analyzed within holding time? (Yes) No N/A

ACTION: If any holding times were exceeded, but not by greater than a factor of two, qualify associated samples as estimated (J for detects or UJ for non-detects), otherwise reject all non-detects (R) and qualify all associated detects as estimated (J).

3. INSTRUMENT CALIBRATION, TUNING AND PERFORMANCE CHECKS

3.1 GC/MS TUNING AND PERFORMANCE CHECKS

	Yes	No	N/A
Is a BFB tune report present for each applicable 12h period?	(Yes)	No	N/A
Do all tunes on all instruments meet the tuning criteria?	(Yes)	No	N/A
Do all tunes on all instruments meet the expanded criteria?	(Yes)	No	N/A
Has the laboratory made any calculation or transciption errors?	Yes	(No)	N/A
Have the proper significant figures been reported?	(Yes)	No	N/A

ACTION: If the mass calibration is out of specification but within the expanded criteria, qualify associated data as estimated (J for detects or UJ for non-detects). If all tuning criteria are missed, qualify all associated data as unusable (R).

3.2 INITIAL CALIBRATION

	Yes	No	N/A
Is an initial calibration report provided for all instruments?	(Yes)	No	N/A
Are all RSD values ≤30% (2/88 SOW)?	Yes	No	(N/A)
Are all RRF values ≥0.05 (2/88 SOW)?	Yes	No	(N/A)

Are all applicable RSD values ≤20.5% (3/90 SOW)? Yes No N/A

Are all applicable RSD values ≤40% (3/90 SOW)? Yes No N/A

Are all applicable RRF values within SOW limits (3/90 SOW)? Yes No N/A

Are all erratic performance compound RRF values ≥0.01 (3/90 SOW)? Yes. No N/A

ACTION: With the exception of compounds that exhibit erratic performance and making allowances for up to two TCL compounds, if any RRF value is out of specification qualify all detected results for the particular compound as estimated (J) and all non-detects as unusable (R). Making allowances for up to two TCL compounds, if any RSD value is out of specification qualify all associated data as estimated (J for detects or UJ for non-detects).

3.3. CONTINUING CALIBRATION

Is a continuing calibration report present for all 12h periods in which associated samples were analyzed ? Yes No N/A

Are all RRF values ≥0.05 (2/88 SOW)? Yes No N/A

Are all %D values ≤25% (2/88 or 3/90 SOW)? Yes No N/A

Are all %D values ≤40% (3/90 SOW)? Yes No N/A

Are all RRF values within SOW limits (3/90 SOW)? Yes No N/A

Are all erratic performance compound RRF values ≥0.01 (3/90 SOW)? Yes No N/A

ACTION: With the exception of compounds that exhibit erratic performance and making allowances for up to two TCL compounds, if any RRF value is out of specification qualify all associated detected results as estimated and all non-detects as unusable (R). Making allowances for up to two TCL compounds, if any %D is out of specification, qualify all associated results as estimated (J for detects or UJ for non-detects).

4. BLANKS

4.1 LABORATORY BLANKS

Has the laboratory conducted a method blank analysis per matrix for every 12h period in which samples were analyzed? Yes No N/A

Are TCL compounds present in the laboratory blanks? Yes No N/A

ACTION: Qualify all sample results < 10X the highest blank concentration for the common laboratory contaminants, as non-detects (U) or at the SQL if the result is < CRQL. Qualify all remaining sample results < 5X the blank concentration in similar fashion.

4.2. FIELD BLANKS

Are TCL compounds present in the field blanks? Yes No (N/A)

ACTION: Qualify all detected sample results less than or equal to five times the amount in any valid field blank as non-detects (U) and note the field blank results in the validation narrative.

5. ACCURACY

5.1 SURROGATE/SYSTEM MONITORING COMPOUND RECOVERY

Are any surrogate recoveries out of specification? Yes (No) N/A

Are any surrogate recoveries less than 10%? Yes (No) N/A

Are any method blank surrogate recoveries out of specification? Yes (No) N/A

ACTION: Qualify all associated sample results as estimated (J for detects or UJ for non-detects) for surrogates out of specification but greater than 10%. Qualify all associated positive sample results as estimated (J) and all non-detect results as unusable (R) for all surrogates below 10%. If method blank surrogates are out of specification and the associated sample surrogates are acceptable no qualification is necessary, however, the laboratory should be contacted for an explanation.

5.2 MATRIX SPIKE RECOVERY

Has an MS/MSD analysis been conducted per matrix in the sample group? (Yes) No N/A

Are MS/MSD recoveries within specification? (Yes) No N/A

Are there any calculation errors? Yes (No) N/A

ACTION: If an MS/MSD analysis has not been conducted contact the laboratory for an explanation. Review the MS/MSD recoveries in conjunction with other QC data such as surrogate recoveries and note the results in the validation narrative. If MS/MSD recoveries are out of specification and sample concentration is greater than five times the spike concentration, no qualification is required, otherwise qualify results as follows: Qualify positive results for the specific class of compound (aromatics and non-aromatics) as estimated (J) in all samples if associated surrogates are also out of specification. The qualification shall only be done on samples of similar matrix as the MS/MSD samples. If it is determined from the review that only the spiked samples are affected by low recoveries, qualify only the results for the spiked sample as described above. If it is determined from the review that out of specification MS/MSD recoveries are indicative of systematic problems in the laboratory such as sample preparation or sample-specific matrix interferences this must be noted in the validation narrative along with the potential affect on the sample results.

5.3 PERFORMANCE AUDIT SAMPLES

Are the performance audit sample results within the acceptance limits? Yes No (N/A)

ACTION: Note the results of the performance audit sample in the validation narrative.

6. PRECISION

6.1 MATRIX SPIKE/MATRIX SPIKE DUPLICATES

Are RPD values within specification? (Yes) No N/A

Are there any calculation errors? Yes (No) N/A

ACTION: Review the MS/MSD results in conjunction with other QC data such as field duplicates and not the results in the validation narrative. If MS/MSD RPDs are out of specification and sample results are greater than five times the CRQL qualify positive results for the specific class of compound (aromatics and non-aromatics) as estimated (J). If it is determined from the review that out of specification MS/MSD results are indicative of systematic problems in the laboratory such as sample preparation or sample-specific matrix interferences this must be noted in the validation narrative along with the potential affect on the sample results.

6.2 FIELD DUPLICATE SAMPLES

Are field duplicate RPD values acceptable? Yes No (N/A)

ACTION: Note the results of the field duplicate samples in the validation narrative.

6.3 FIELD SPLIT SAMPLES

Are field split RPD values acceptable? (Yes) No (N/A)

ACTION: Note the results of the field split samples in the validation narrative.

7. SYSTEM PERFORMANCE

7.1 INTERNAL STANDARDS PERFORMANCE

Are any internal standard area counts outside the acceptance limits? Yes (No) N/A

Are retention times for any internal standard outside the ±30 second windows established by the most recent calibration check? Yes (No) N/A

ACTION: If the area counts are outside the acceptance limits qualify all associated results as estimated (J for detects or UJ for non-detects). If it is determined from the review that out of specification area counts and relative retention times are indicative of systematic problems within the laboratory the reviewer may consider rejection of all affected sample data (R).

8. COMPOUND IDENTIFICATION AND QUANTITATION

8.1 COMPOUND IDENTIFICATION

Are detected compounds within ±0.06 relative retention time units of the associated calibration standard? (Yes) No N/A

Are all ions at a relative intensity of ≥10% in the standard spectra present in the sample spectra? (Yes) No N/A

Do the relative intensities between the standard and sample spectra agree within 20%? (Yes) No N/A

Have all ions >10% in the sample spectra that are not present in the standard spectra been reviewed for possible background contamination? Yes No (N/A)

Are molecular ions present in the reference specrum present in the sample spectrum? Yes No (N/A)

ACTION: If compound identification is in error and retention time and mass spectral criteria are exceeded qualify all affected positive results as unusable (R). If cross-contamination between analyses is suspected, qualify affected data as unusable (R). Note the results in the validation narrative.

8.2 REPORTED RESULTS AND QUANTITATION LIMITS

Has the laboratory used the correct RRF values and internal standard(s) for quantitation? (Yes) No N/A

Are results and quantitation limits calculated properly? (Yes) No N/A

Has the laboratory reported the sample quantitation limits within five times the CRQL values? (Yes) No N/A

ACTION: If the results and quantitation limits are in error contact the laboratory for clarification and note in the validation narrative.

8.3 TENTATIVELY IDENTIFIED COMPOUNDS (TIC)

Has the laboratory conducted a spectral library search on all candidate TIC peaks in accordance with the analytical SOW? Yes (No) (N/A)

Has the laboratory properly identified and coded all TIC? Yes No (N/A)

ACTION: If the laboratory has failed to search the minimum number of TIC peaks in the chromatogram contact the laboratory for submittal of the required data. Qualify as non-detects (U) all TIC compounds present in samples and blanks using the review criteria specified in the validation requirements. If TIC identification is in error sample results should be qualified as non-detects (U) or unusable (R). If TIC identifications are judged valid, qualify the results as presumptive and estimated (JN).

9. OVERALL ASSESSMENT AND SUMMARY

Has the laboratory conducted the analysis in accordance with the analytical SOW? Yes No N/A

Were project specific data quality objectives met for this analysis? Yes No N/A

ACTION: Summarize all the data qualifications recommended in the foregoing sections, and complete the data validation narrative according to the requirements of Section 10 of the data validation requirements.

COMMENTS (attach additional sheets as necessary):

VOLATILE ORGANIC ANALYSIS, WATER MATRIX, (ug/L)

Project: WESTINGHOUSE-HANFORD																					
Laboratory: ROY F. WESTON																					
Case	SDG: B07L90																				
Sample Number		B07L90		B07L93																	
Location		699-93-49B		699-93-49B																	
Remarks		SPLIT		SPLIT, TB																	
Sample Date		10/30/92 →																			
Analysis Date		11/06/92 →																			
Volatile Organic Compound	CRQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Chloromethane	10																				
Bromomethane	10																				
Vinyl Chloride	10																				
Chloroethane	10																				
Methylene Chloride	10																				
Acetone	10																				
Carbon Disulfide	10																				
1,1-Dichloroethene	10																				
1,1-Dichloroethane	10																				
1,2-Dichloroethene (total)	10																				
Chloroform	10																				
1,2-Dichloroethane	10																				
2-Butanone	10																				
1,1,1-Trichloroethane	10																				
Carbon Tetrachloride	10																				
Bromodichloromethane	10																				
1,2-Dichloropropane	10																				
cis-1,3-Dichloropropene	10																				
Trichloroethene	10																				
Dibromochloromethane	10																				
1,1,2-Trichloroethane	10																				
Benzene	10																				
trans-1,3-Dichloropropene	10																				
Bromoform	10																				
4-Methyl-2-pentanone	10																				
2-Hexanone	10																				
Tetrachloroethene	10																				
1,1,2,2-Tetrachloroethane	10																				
Toluene	10																				
Chlorobenzene	10																				
Ethylbenzene	10																				
Styrene	10																				
Xylene (total)	10																				

TB: Trip Blank

9613451.2848 X02007

SEMI-VOLATILE ORGANIC DATA VALIDATION CHECKLIST - FORM A-2

PROJECT: Westinghouse-Hanford	REVIEWER: SC	DATE: 4-28-93
LABORATORY: ROY F. Weston	CASE:	SDG: B07940
SAMPLES/MATRIX: water		
B07L90		

1. DATA PACKAGE COMPLETENESS

Review the data package for completeness and check off the items below. If any data review elements are missing contact the laboratory for submittal.

Data Package Item	Present?:	Yes	No	N/A
Case Narrative	✓	—	—	
Data Summary	✓	✓	—	
Chain-of-Custody		✓	—	—
QC Summary				
Surrogate report		✓	—	—
MS/MSD report		✓	—	—
Blank summary report	✓	—	—	
GC/MS tuning report	✓	—	—	
Internal standard summary report		✓	—	—
Sample Data				
Sample reports	✓	—	—	
TIC reports for each sample		✓	—	—
RIC reports for all samples		✓	—	—
Raw and corrected spectra for all detected results		✓	—	—
Raw and corrected library search data for all reported TIC	✓	—	—	
Quantitation and calculation data for all TIC	✓	—	—	
Standards Data				
Initial calibration report		✓	—	—
RIC and quantitation reports for initial calibration		✓	—	—
Continuing calibration reports	✓	—	—	
RIC and quantitation reports for cont. calibrations		✓	—	—
Internal standard summary report		✓	—	—
Raw QC Data				
Tuning report, spectra and mass lists	✓	—	—	
Blank analysis reports	✓	—	—	
TIC reports for all blanks		✓	—	—
RIC and quantitation reports for blanks		✓	—	—
Raw and corrected spectra for all detected results in blanks	✓	—	—	
Raw and corrected library search data for all reported TIC	✓	—	—	
Quantitation and calculation data for all TIC	✓	—	—	
MS/MSD report forms	✓	—	—	

Data Package Item	Present?:	Yes	No	N/A
RIC and quantitation reports for MS/MSD		✓		
Additional Data				
Moisture/% solids data sheets			✓	
Reduction formulae			✓	
Instrument time logs		✓		
Chemist notebook pages		✓		
Sample preparation sheets		✓		

2. HOLDING TIMES

Were all samples extracted within holding time?	Yes	No	N/A
Were all samples analyzed within holding time?	Yes	No	N/A

ACTION: If any holding times were exceeded, but not by greater than a factor of two, qualify associated samples as estimated (J for detects or UJ for non-detects), otherwise reject all non-detects (R) and qualify all associated detects as estimated (J).

3. INSTRUMENT CALIBRATION, TUNING AND PERFORMANCE CHECKS

3.1 GC/MS TUNING AND PERFORMANCE CHECKS

Is a DFTPP tune report present for each applicable 12h period?	Yes	No	N/A
Do all tunes on all instruments meet the tuning criteria?	Yes	No	N/A
Do all tunes on all instruments meet the expanded criteria?	Yes	No	N/A
Has the laboratory made any calculation or transciption errors?	Yes	No	N/A
Have the proper significant figures been reported?	Yes	No	N/A

ACTION: If the mass calibration is out of specification but within the expanded criteria, qualify associated data as estimated (J for detects and UJ for non-detects). If all tuning criteria are not met, qualify all associated data as unusable (R).

3.2 INITIAL CALIBRATION

Is an initial calibration report provided for all instruments?	Yes	No	N/A
Are all RSD values ≤30% (2/88 SOW)?	Yes	No	N/A
Are all RRF values ≥0.05 (2/88 SOW)?	Yes	No	N/A
Are all applicable RSD values ≤20.5% (3/90 SOW)?	Yes	No	N/A
Are all applicable RSD values ≤40% (3/90 SOW)?	Yes	No	N/A

Are all applicable RRF values within SOW limits (3/90 SOW)? Yes No N/A

Are all erratic performance compound RRF values ≥0.01 (3/90 SOW)? Yes No N/A

ACTION: With the exception of compounds that exhibit erratic performance and making allowances for up to four TCL compounds or surrogates, if any RRF value is out of specification qualify all detected results for the particular compound as estimated (J) and all non-detects as unusable (R). Making allowances for up to four TCL compounds or surrogates, if any RSD value is out of specification qualify all associated data as estimated (J for detects or UJ for non-detects).

3.3. CONTINUING CALIBRATION

Is a continuing calibration report present for all 12h periods in which associated samples were analyzed? Yes No N/A

Are all RRF values ≥0.05 (2/88 SOW)? Yes No N/A

Are all %D values ≤25% (2/88 or 3/90 SOW)? Yes No N/A

Are all %D values ≤40% (3/90 SOW)? Yes No N/A

Are all RRF values within SOW limits (3/90 SOW)? Yes No N/A

Are all erratic performance compound RRF values ≥0.01 (3/90 SOW)? Yes No N/A

ACTION: With the exception of compounds that exhibit erratic performance and making allowances for up to four TCL compounds or surrogates, if any RRF value is out of specification qualify all associated detected results as estimated and all non-detects as unusable (R). Making allowances for up to four TCL compounds or surrogates, if any %D is out of specification, qualify all associated results as estimated (J for detects or UJ for non-detects).

4. BLANKS

4.1 LABORATORY BLANKS

Has the laboratory conducted a method blank analysis per matrix for every extraction batch? Yes No N/A

Are compounds reported in the laboratory blanks? Yes No N/A

ACTION: Qualify all sample results < 10X the highest blank concentration for the common laboratory contaminants, as non-detects (U) or at the SQL if the result is < CRQL. Qualify all remaining sample results < 5X the blank concentration in similar fashion.

4.2. FIELD BLANKS

Are compounds reported in the field blanks? Yes No (N/A)

ACTION: Qualify all detected sample results less than or equal to five times the amount in any valid field blank as non-detects (U) and note the results of the field blanks in the validation narrative.

5. ACCURACY

5.1 SURROGATE RECOVERY/SYSTEM MONITORING COMPOUND RECOVERY

Are any surrogate recoveries out of specification? Yes (No) N/A

Are any surrogate recoveries less than 10%? Yes (No) N/A

Are any method blank surrogate recoveries out of specification? Yes (No) N/A

ACTION: Qualify all associated data as estimated (J for detects and UJ for non-detects) if at least two semivolatile surrogates are out of specification. If any surrogate is below 10% recovery qualify associated detected results as estimated (J) and associated non-detect results as unusable (R). If method blank surrogates are out of specification and associated sample surrogates are acceptable no qualification is required, however, the laboratory should be contacted for an explanation.

5.2 MATRIX SPIKE RECOVERY

Has an MS/MSD analysis been conducted per matrix in the sample group? (Yes) No N/A

Are MS/MSD recoveries within specification? (Yes) No N/A

Are there any calculation errors? Yes (No) N/A

ACTION: If an MS/MSD analysis has not been conducted contact the laboratory for an explanation. Review the MS/MSD recoveries in conjunction with other QC data such as surrogate recoveries and note the results in the validation narrative. If MS/MSD recoveries are out of specification and sample concentration is greater than five times the spike concentration, no qualification is required, otherwise qualify results as follows: Qualify positive results for the specific class of compound (aromatics and non-aromatics) as estimated (J) in all samples if associated surrogates are also out of specification. The qualification shall only be done on samples of similar matrix as the MS/MSD samples. If it is determined from the review that only the spiked samples are affected by low recoveries, qualify only the results for the spiked sample as described above. If it is determined from the review that out of specification MS/MSD recoveries are indicative of systematic problems in the laboratory such as sample preparation or sample-specific matrix interferences this must be noted in the validation narrative along with the potential affect on the sample results.

5.3 PERFORMANCE AUDIT SAMPLES

Are the results for the performance audit samples within the acceptance limits? Yes No (N/A)

ACTION: Note the results of the performance audit samples in the validation narrative.

6. PRECISION

6.1 MATRIX SPIKE/MATRIX SPIKE DUPLICATES

Are all RPD values within specification? (Yes) No N/A

Are there any calculation errors? Yes (No) N/A

ACTION: Review the MS/MSD results in conjunction with other QC data such as field duplicates and not the results in the validation narrative. If MS/MSD RPDs are out of specification and sample results are greater than five times the CRQL qualify positive results for the specific class of compound (aromatics and non-aromatics) as estimated (J). If it is determined from the review that out of specification MS/MSD results are indicative of systematic problems in the laboratory such as sample preparation or sample-specific matrix interferences this must be noted in the validation narrative along with the potential affect on the sample results.

6.2 FIELD DUPLICATE SAMPLES

Are field duplicate RPD values acceptable? Yes No (N/A)

ACTION: Note the results of the field duplicate samples in the validation narrative.

6.3 FIELD SPLIT SAMPLES

Are field split RPD values acceptable? (Yes) No N/A

ACTION: Note the results of the field split samples in the validation narrative.

7. SYSTEM PERFORMANCE

7.1 INTERNAL STANDARDS PERFORMANCE

Are any internal standard area counts outside the acceptance limits? Yes (No) N/A

Are retention times for any internal standard outside the ±30 second windows established by the most recent calibration check? Yes (No) N/A

ACTION: If the area counts are outside the acceptance limits qualify all associated results as estimated (J for detects and UJ for non-detects. If it is determined from the review that out of specification area counts and relative retention times are indicative of systematic problems within the laboratory the reviewer may consider rejection of all affected sample data (R).

8. COMPOUND IDENTIFICATION AND QUANTITATION

8.1 COMPOUND IDENTIFICATION

Are detected compounds within ±0.06 relative retention time units of the associated calibration standard? Yes No N/A

Are all ions at a relative intensity of ≥10% in the standard spectra present in the sample spectra? Yes No N/A

Do the relative intensities between the standard and sample spectra agree within 20%? Yes No N/A

Have all ions >10% in the sample spectra that are not present in the standard spectra been reviewed for possible background contamination? Yes No N/A

Are molecular ions in the reference spectrum present in the sample spectrum? Yes No N/A

ACTION: If compound identification is in error and retention time and mass spectral criteria are exceeded qualify all affected positive results as unusable (R). If cross-contamination between analyses is suspected, qualify affected data as unusable (R).

8.2 REPORTED RESULTS AND QUANTITATION LIMITS

Has the laboratory used the correct RRF values and internal standards for quantitation? Yes No N/A

Are results and quantitation limits calculated properly? Yes No N/A

Has the laboratory reported the sample quantitation limits within five times the CRQL values? Yes No N/A

ACTION: If the quantitation limits are in error contact the laboratory for clarification and note in the validation narrative.

8.3 TENTATIVELY IDENTIFIED COMPOUNDS

Has the laboratory conducted a spectral library search on all candidate TIC peaks in accordance with the analytical SOW? Yes No N/A

Has the laboratory properly identified and coded all TIC? Yes No N/A

ACTION: If the laboratory has failed to search the minimum number of TIC peaks in the chromatogram contact the laboratory for submittal of the required data. Qualify as non-detects (U) all TIC compounds present in samples and blanks using the review criteria specified in the validation requirements. If TIC identification is in error sample results should be qualified as non-detects (U) or unusable (R). If TIC identifications are judged valid, qualify the results as presumptive and estimated (JN).

9. OVERALL ASSESSMENT AND SUMMARY

Has the laboratory conducted the analysis in accordance with the analytical SOW? (Yes) No N/A

Were project specific data quality objectives met for this analysis? (Yes) No N/A

ACTION: Summarize all the data qualifications and complete the data validation narrative as specified in Section 10 of the data validation requirements.

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COMMENTS (attach additional sheets as necessary):

water ug/L

SEMIVOLATILE ORGANIC ANALYSIS, ~~SOIL~~ MATRIX, (~~ug/kg~~)

Project: WESTINGHOUSE-HANFORD																					
Laboratory: ROY F. Weston																					
Case	SDG: B07L90																				
Sample Number		B07L90																			
Location		699-93-46																			
Remarks		SPLIT																			
Sample Date		10/30/92																			
Extraction Date		11/05/92																			
Analysis Date		11/10/92																			
Semivolatile Compound	CRQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Phenol	330																				
bis(2-Chloroethyl)Ether	330																				
2-Chlorophenol	330																				
1,3-Dichlorobenzene	330																				
1,4-Dichlorobenzene	330																				
Benzyl Alcohol	330																				
1,2-Dichlorobenzene	330																				
2-Methylphenol	330																				
bis(2-Chloroisopropyl)Ether	330																				
4-Methylphenol	330																				
N-Nitroso-di-n-Propylamine	330																				
Hexachloroethane	330																				
Nitrobenzene	330																				
Isophorone	330																				
2-Nitrophenol	330																				
2,4-Dimethylphenol	330																				
Benzoic acid	1700																				
bis(2-Chloroethoxy)Methane	330																				
2,4-Dichlorophenol	330																				
1,2,4-Trichlorobenzene	330																				
Naphthalene	330																				
4-Chloroaniline	330																				
Hexachlorobutadiene	330																				
4-Chloro-3-Methylphenol	330																				
2-Methylnaphthalene	330																				
Hexachlorocyclopentadiene	330																				
2,4,6-Trichlorophenol	330																				
2,4,5-Trichlorophenol	1700																				
2-Chloronaphthalene	330																				
2-Nitroaniline	1700																				
Dimethylphthalate	330																				
Acenaphthylene	330																				

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SEMIVOLATILE ORGANIC ANALYSIS, SOIL MATRIX, (ug/Kg)

Project:																					
Laboratory:																					
Case:	SDG:																				
Sample Number																					
Location																					
Remarks																					
Sample Date																					
Extraction Date																					
Analysis Date																					
Semivolatile Compound	CRQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
3-Nitroaniline	1700																				
Acenaphthene	330																				
2,4-Dinitrophenol	1700																				
4-Nitrophenol	1700																				
Dibenzofuran	330																				
2,4-Dinitrotoluene	330																				
2,6-Dinitrotoluene	330																				
Diethylphthalate	330																				
4-Chlorophenyl-Phenylether	330																				
Fluorene	330																				
4-Nitroaniline	1700																				
4,6-Dinitro-2-Methylphenol	1700																				
N-Nitrosodiphenylamine	330																				
4-Bromophenyl-Phenylether	330																				
Hexachlorobenzene	330																				
Pentachlorophenol	1700																				
Phenanthrene	330																				
Anthracene	330																				
Di-n-Butylphthalate	330																				
Fluoranthene	330																				
Pyrene	330																				
Butylbenzylphthalate	330																				
3,3'-Dichlorobenzidine	330																				
Benzo(a)Anthracene	330																				
bis(2-Ethylhexyl)Phthalate	330																				
Chrysene	330																				
Di-n-Octylphthalate	330																				
Benzo(b)Fluoranthene	330																				
Benzo(k)Fluoranthene	330																				
Benzo(a)Pyrene	330																				
Indeno(1,2,3-cd)Pyrene	330																				
Dibenz(a,h)Anthracene	330																				
Benzo(g,h,i)Perylene	330																				

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PESTICIDE/PCB DATA VALIDATION CHECKLIST - FORM A-3

PROJECT: Westinghouse-Hanford	REVIEWER: SC	DATE: 4-26-93
LABORATORY: ROT F. Weston	CASE:	SDG: B07L90
SAMPLES/MATRIX: water		
B07L90		

1. DATA PACKAGE COMPLETENESS

Review the data package for completeness and check off the items below. If any data review elements are missing contact the laboratory for re-submittal.

Data Package Item	Present?:	Yes	No	N/A
Case Narrative	✓	—	—	
Data Summary	—	—	—	
Chain-of-Custody		—	—	—
QC Summary		✓		
Surrogate report		—	—	—
MS/MSD report		—	—	—
Blank summary report	✓	—	—	
Sample Data	✓			
Sample reports	—	—	—	
Chromatograms		✓	—	—
GC integration reports	✓	—	—	
Worksheets		✓	—	—
UV traces from GPC		—	—	✓
GC/MS confirmation spectra		—	—	✓
Standards Data				
Pesticides Evaluation Standards Summary		✓	—	—
Pesticides/PCB Standards Summary		✓	—	—
Pesticides/PCB identification		✓	—	—
Pesticides standard chromatograms		✓	—	—
Raw QC Data				
Blank analysis report forms and chromatograms		✓	—	—
MS/MSD report forms and chromatograms		—	—	—

Data Package Item	Present?:	Yes	No	N/A
Additional Data			✓	
Moisture/% solids data sheets	—	—	—	
Reduction formulae		—	✓	—
Instrument time logs		✓	—	—
Chemist notebook pages		✓	—	—
Sample preparation sheets		✓	—	—

2. HOLDING TIMES

Were all samples extracted within holding time? (Yes) No N/A

Were all samples analyzed within holding time? (Yes) No N/A

ACTION: If any holding times were exceeded, but not by greater than a factor of two, qualify associated samples as estimated (J for detects or UJ for non-detects), otherwise reject all non-detects (R) and qualify all associated detects as estimated (J).

3. INSTRUMENT PERFORMANCE AND CALIBRATIONS

3.1 INSTRUMENT PERFORMANCE (2/88 SOW)

Are DDT retention times greater than 12 minutes? Yes No (N/A)

ACTION: If DDT retention time is < 12 minutes and resolution is ≤25% qualify associated data as unusable (R).

Is resolution between DDT peaks acceptable? Yes No (N/A)

ACTION: If resolution between DDT peaks is unacceptable qualify associated data as unusable (R).

Do all pesticide standards elute within the established retention time windows? Yes No (N/A)

ACTION: If the standards do not meet the retention time criteria and peaks are not present near or within the retention time windows no sample qualification is necessary. If peaks are near or within the retention time windows and the standards and matrix spikes do not fall within the expanded retention time windows calculated according to the validation requirements, qualify all associated sample results from the last in-control point as unusable (R).

Are DDT breakdowns <20%? Yes No (N/A)

ACTION: If the DDT percent breakdown exceeds 20%, qualify all detected results for DDT as estimated (J) and all non-detects as unusable (R) if DDD and DDE are detected. In addition qualify all results for DDD or DDE as presumptive and estimated (NJ).

Are endrin breakdowns <20%? Yes No (N/A)

ACTION: If the endrin breakdown exceeds 20%, qualify all detected results for endrin as estimated

(J) and all non-detects as unusable (R) if endrin aldehyde or endrin ketone are detected. In addition qualify all results for endrin ketone as presumptive and estimated (NJ).

Are DBC retention time differences within specification? Yes No N/A

ACTION: If DBC %D values are outside the limits and the shift is ocurring repeatedly in samples and standards, qualify affected sample results as unusable (R).

3.2 CALIBRATIONS (2/88 SOW)

Are RSD values for aldrin, endrin, DDT and DBC ≤10%? Yes No N/A

Have all standards been analyzed within 72 hours of any sample? Yes No N/A

Has a 3-point calibration been conducted for DDT or toxaphene? Yes No N/A

Have all standards been analyzed at the start of each 72h sequence? Yes No N/A

Have evaluation standards A, B, and C been analyzed within 72h of any sample? Yes No N/A

Has the confirmation standard mix been analyzed after every 5 samples? Yes No N/A

Has evaluation standard B analyzed every 10 samples? Yes No N/A

Are %D values for initial and subsequent standards ≤15% for quantitation standards and ≤20% for confirmation standards? Yes No N/A

ACTION: If the RSD criteria were exceeded or three point calibrations not conducted qualify associated detects as estimated (J). If all standards were not analyzed at the beginning of each 72h sequence qualify associated data as unusable (R). If the confirmation standards were not analyzed properly qualify associated detects as estimated (J). If the continuing calibration criteria were not met qualify associated quantitation data as estimated (J).

3.3 INSTRUMENT PERFORMANCE AND INITIAL CALIBRATION (3/90 SOW)

Is peak resolution acceptable? Yes No N/A

ACTION: If the resolution criteria are not met, reject positive sample results generated after initial calibration (R).

Are DDT and endrin breakdowns ≤20.0% Yes No N/A

ACTION: If the breakdown criteria are not met qualify sample results as described in Section 5.3.1 of the validation requirements.

Are single component target compounds in the PEMs, INDA, INDB and the calibration standards within the retention time windows? Yes No N/A

ACTION: If the retention time criteria are not met and no peaks are present in the samples within two times the retention time windows (±0.04, ±0.05 for methoxychlor), no qualification is necessary. If peaks are present in samples within the retention time window a review is made of the raw data to determine expanded retention time windows (see Section 5.3.1 of the validation requirements). If all standards and matrix spikes fall within the expanded windows then no qualification of sample results is necessary. If all standards and matrix spikes do not fall within the expanded windows then all affected sample results are qualified as unusable (R).

Are the RPDs acceptable for the PEMs? Yes No N/A

ACTION: If the RPD criteria are not met qualify associated positive sample results as estimated (J).

Are the RSDs for the calibration factors < 10.0% (< 15.0% for the BHC series, DDT, endrin and methoxychlor)? Yes No N/A

ACTION: If the RSD criteria are not met qualify associated positive sample results as estimated (J).

3.4 CALIBRATION VERIFICATION (3/90 SOW)

Have the analytical sequence requirements been met for the analysis of instrument blanks, PEMs, INDA and INDB mixes? Yes No N/A

ACTION: If the analytical sequence requirements are not followed and any of the resolution or retention time criteria listed below are exceeded, reject associated positive results (R).

Is peak resolution acceptable for PEMs, INDA and INDB mixes? Yes No N/A

ACTION: If the resolution criteria are not met reject positive sample results generated after a non-compliant standard analysis (R).

Are single component target compounds in the PEMs, INDA and INDB mixes within the retention time windows? Yes No N/A

ACTION: If the retention time criteria are not met and no peaks are present in the samples analyzed after the non-compliant standard within two times the retention time windows (±0.04, ±0.05 for methoxychlor), no qualification is necessary. If peaks are present in samples within the expanded windows rejected associated positive and non-detect results (R).

Are RPDs between the calculated and true amounts in the PEMs, INDA and INDB mixes ≤25.0%? Yes No N/A

ACTION: If the RPD criteria are not met qualify associated positive sample results as estimated (J).

Are DDT and endrin breakdowns in the PEMs ≤20.0% (≤30.0% total combined)? Yes No N/A

ACTION: If the breakdown criteria are not met qualify associated positive sample results in accordance with the criteria specified in Section 5.3.1.

4. BLANKS

4.1 LABORATORY BLANKS

Has the laboratory analyzed the method blanks at the required frequency? Yes No N/A

Has the laboratory analyzed a sulfur clean-up blank if required? Yes No N/A

Has the laboratory analyzed instrument blanks at the required frequency? Yes No N/A

Are target compounds present in the blanks? Yes No N/A

ACTION: Qualify all associated positive results as non-detects (U) that are <5X the highest concentration in any acceptable blank.

4.2 FIELD BLANKS

Are target compounds present in the field blanks? Yes No N/A

ACTION: If target compounds are present in the field blanks qualify all positive sample results <5X the highest valid field blank concentrations as non-detects (U) and note the results in the validation narrative.

5. ACCURACY

5.1 SURROGATE RECOVERY

Are any surrogate recoveries out of specification? **Yes** No N/A

Do any samples show non-detects for surrogates? Yes **No** N/A

Are any method blank surrogates out of specification? **Yes** No N/A

ACTION: Qualify all associated sample results as estimated (J for detects and UJ for non-detects) for surrogates out of specification. If the surrogate was not detected (0% recovery) in the sample qualify associated non-detects as unusable (R). If method blank surrogates are out of specification and sample surrogates are acceptable, no qualification is required however, the laboratory should be contacted for an explanation.

5.2 MATRIX SPIKE RECOVERY

Has the laboratory analyzed a MS/MSD per matrix for the the sample group? **Yes** No N/A

Are MS/MSD recoveries within specification? **Yes** No N/A

Are there any calculation or transcription errors? Yes **No** N/A

ACTION: If MS/MSD analyses have not been conducted contact the laboratory for clarification. Review the MS/MSD recoveries in conjunction with other QC data such as surrogate recoveries and note the results in the validation narrative. If MS/MSD recoveries are out of specification and sample concentration is greater than five times the spike concentration, no qualification is required, otherwise qualify results as follows: Qualify positive results as estimated (J) in all samples if associated surrogates are also out of specification. The qualification shall only be done on samples of similar matrix as the MS/MSD samples. If it is determined from the review that only the spiked samples are affected by the low recoveries, qualify only the results for the spiked sample as described above. If it is determined from the review that out of specification MS/MSD recoveries are indicative of systematic problems in the laboratory such as sample preparation or sample-specific matrix interferences this must be noted in the validation narrative along with the potential affect on the sample results.

5.3 PERFORMANCE AUDIT SAMPLES

Are performance audit sample results within the acceptance limits? Yes No **N/A**

ACTION: Note the results of the performance audit samples in the validation narrative.

6. PRECISION

6.1 MATRIX SPIKE/MATRIX SPIKE DUPLICATE SAMPLES

Are the RPD values within specification? (Yes) No N/A

ACTION: Review the MS/MSD results in conjunction with other QC data such as field duplicates and note the results in the validation narrative. If MS/MSD RPD values are out of specification and sample results are greater than five times the CRQL qualify positive results as estimated (J). If it is determined from the review that out of specification MS/MSD results are indicative of systematic problems in the laboratory such as sample preparation or sample-specific matrix interferences this must be noted in the validation narrative along with the potential affect on the sample results.

6.2 FIELD DUPLICATE SAMPLES

Are field duplicate RPD values acceptable? Yes No (N/A)

ACTION: Note the results of the field duplicate samples in the validation narrative.

6.3 FIELD SPLIT SAMPLES

Are field split RPD values acceptable? (Yes) No N/A

ACTION: Note the results of the field split samples in the validation narrative.

7. COMPOUND IDENTIFICATION AND QUANTITATION

7.1 COMPOUND IDENTIFICATION

Do positive results meet the retention time window criteria? Yes No (N/A)

Were positive results analyzed on disimilar columns? Yes No (N/A)

If dieldrin and DDE were reported was a 3% OV-1 column used for confirmation (2/88 SOW data only)? Yes No (N/A)

Do retention times and relative peak height ratios match the expected patterns for multipeak compounds (PCB, toxaphene or chlordane)? Yes No (N/A)

Has GC/MS confirmation been conducted on sample extract concentrations > 10 ppm? Yes No (N/A)

ACTION: If positive results do not meet the retention time criteria qualify all detected results as non-detects as follows: If the misidentified peak is outside the retention time windows and no interferences are noted report the CRQL and if the misidentified peak interferes with a target peak then the report value is qualified as estimated and non-detected (UJ). If positive results were not confirmed on disimilar columns, reject affected results (R). If a 3% OV-1 was used to confirm dieldrin and DDE, reject the affected data (R). If PCB, chlordane or toxaphene identification is questionable qualify the results as presumptive and estimated (NJ). If GC/MS confirmation was not conducted contact the laboratory for explanation and note in the validation narrative.

7.2 REPORTED RESULTS AND QUANTITATION LIMITS

Are results and quantitation limits calculated properly?	Yes	No	N/A
Has the laboratory reported the sample quantitation limits within five times the CRQL values?	Yes	No	N/A

ACTION: If results and quantitation limits are in error contact the laboratory for clarification and note in the validation narrative.

8. OVERALL ASSESSMENT AND SUMMARY

Has the laboratory conducted the analysis in accordance with the analytical SOW?	Yes	No	N/A
Were project specific data quality objectives met for this analysis?	Yes	No	N/A

ACTION: Summarize all the data qualifications and complete the data validation narrative as specified in Section 10 of the data validation requirements.

COMMENTS (attach additional sheets as necessary):

PESTICIDE/PCB ORGANIC ANALYSIS, SOIL MATRIX, (ug/Kg)

Project: WESTINGHOUSE-HANFORD																					
Laboratory: ROY F. Weston																					
Case	SDG: B07L90																				
Sample Number		B07L90																			
Location		699-93-49B																			
Remarks		SPLIT																			
Sample Date		10-30-92																			
Extraction Date		11-04-92																			
Analysis Date		11-10-92																			
Pesticide/PCB	CRQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
alpha-BHC	1.7																				
beta-BHC	1.7																				
delta-BHC	1.7																				
gamma-BHC (Lindane)	1.7																				
Heptachlor	1.7																				
Aldrin	1.7																				
Heptachlor Epoxide	1.7																				
Endosulfan I	1.7																				
Dieldrin	3.3																				
4,4'-DDE	3.3																				
Endrin	3.3																				
Endosulfan II	3.3																				
4,4'-DDD	3.3																				
Endosulfan Sulfate	3.3																				
4,4'-DDT	3.3																				
Methoxychlor	17.0																				
Endrin Ketone	3.3																				
alpha-Chlordane	1.7																				
gamma-Chlordane	1.7																				
Toxaphene	170.0																				
Arochlor-1016	33.0																				
Arochlor-1221	33.0																				
Arochlor-1232	67.0																				
Arochlor-1242	33.0																				
Arochlor-1248	33.0																				
Arochlor-1254	33.0																				
Arochlor-1260	33.0																				

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WET CHEMISTRY DATA VALIDATION CHECKLIST - FORM A-7

PROJECT: Westinghouse-Hanford	REVIEWER: SC	DATE: 4-26-93
LABORATORY: ROY F. WESTON	CASE:	SDG: B07L90
SAMPLES/MATRIX: Water, B07L90		

1. DATA PACKAGE COMPLETENESS

Review the data package for completeness and check off the items below. If any data review elements are missing contact the laboratory for submittal of the omitted data.

Data Package Item	Present?:	Yes	No	N/A
Case Narrative	✓	✓	—	
Cover Page	—	✓	—	—
Traffic Reports/Chain-of-Custody	—	✓	—	—
Sample Analysis Data Report Forms	✓	—	—	
Standards Data	✓	—	—	
QC Summary	—	—	—	
Blanks Summary Report Forms	—	✓	—	—
Spike Sample Recovery Report Forms	✓	—	—	
Duplicate Sample Analysis Report Forms	—	✓	—	—
Laboratory Control Sample Report Forms	—	✓	—	—
Raw Data	—	—	—	
Ion Chromatograph Chromatograms	✓	—	—	
TOC and TOX Instrument Printouts	✓	—	—	
Laboratory Bench Sheets	—	✓	—	—
Additional Data	—	—	—	
Laboratory Sample Preparation Logs	✓	—	—	
Instrument Run Logs	✓	—	—	
Internal Laboratory Chain-of-Custory	✓	—	—	
Percent Solids Analysis Records	—	—	—	✓
Reduction Formulae	—	—	✓	—
Chemist Notebook Pages	—	✓	—	—

2. HOLDING TIMES

Were all samples analyzed within holding times? Yes (No) N/A

Action: If any holding times were exceeded qualify all affected results as estimated (J for detects and UJ for non-detects).

3. INITIAL CALIBRATIONS

Were all instruments calibrated daily, each set-up time and were the proper number of standards used?	Yes	No	N/A
Are the correlation coefficients ≥0.995?	Yes	No	N/A
Was a balance check conducted prior to the TDS analysis?	Yes	No	N/A
Was the titrant normality checked?	Yes	No	N/A

ACTION: Qualify all data as unusable (R) if reported from an analysis in which the above criteria were not met.

4. INITIAL AND CONTINUING CALIBRATION VERIFICATION

Have ICV and CCV been analyzed at the proper frequency?	Yes	No	N/A
Are ICV and CCV percent recoveries within control?	Yes	No	N/A
Are there calculation errors?	Yes	No	N/A

ACTION: Qualify all affected data in accordance with the validation requirements.

5. LABORATORY BLANKS

Are target analytes present in the laboratory blanks?	Yes	No	N/A

ACTION: Qualify all associated sample results for any analyte <5X the amount in any laboratory blank as non-detected (U) and list the affected samples and analytes below.

6. FIELD BLANKS

Are target analytes present in the field blanks?	Yes	No	N/A

ACTION: Qualify all sample results for any analyte <5X the amount in any valid field blank as non-detected (U).

7. MATRIX SPIKE SAMPLE ANALYSIS

Are spike recoveries within the acceptance limits?	Yes	No	N/A

ACTION: If the sample concentration exceeds the spike concentration by a factor of 4 or more, and spike recoveries are outside the acceptance limits, no qualification is necessary. If spike recovery is outside the control limits and the sample results are greater than the CRQL, qualify the data as estimated (J). If the spike recovery is less than 30% and the sample results are less then the IDL qualify the data as unusable (R).

8. LABORATORY CONTROL SAMPLE

Are percent recoveries within the acceptance limits? (Yes) No N/A

Are there calculation errors? Yes (No) N/A

ACTION: Qualify the affected results according to the following requirements:

AQUEOUS LCS - Qualify as estimated (J), all sample results > IDL, for which the LCS %R falls within the range 50-79% or > 120%. Qualify as estimated (UJ), all sample results < IDL, for which the LCS falls within the range of 50-79%. Qualify as unusable (R) all sample results, for which the LCS %R <50%.

SOLID LCS - Qualify as estimated (J), all sample results > IDL for which the LCS %R is outside the established control limits. Qualify as estimated (UJ), all sample results < IDL for which the LCS %R are lower than the established control limits.

9. PERFORMANCE AUDIT ANALYSES

Are the performance audit sample results within the acceptance limits? Yes No (N/A)

ACTION: Note the results of the performance audit samples in the validation narrative.

10. DUPLICATE SAMPLE ANALYSIS

Are RPD values within the acceptance limits? (Yes) No N/A

Action: Qualify the results for all associated samples of the same matrix as estimated (J) if the RPD falls outside the acceptance limits.

11. FIELD DUPLICATE SAMPLES

Do RPD values exceed the acceptance limits? Yes No (N/A)

ACTION: Note the results of the field duplicate samples in the validation narrative.

12. FIELD SPLIT SAMPLES

Do RPD values exceed the acceptance limits? (Yes) No N/A

ACTION: Note the results of the field split samples in the validation narrative.

13. ANALYTE QUANTITATION AND DETECTION LIMITS

Have results been reported and calculated correctly? (Yes) No N/A

Are instrument detection limits below the CRDL? (Yes) No N/A

Action: If analyte quantitation is in error, contact the laboratory for explanation. If errors or deficiencies can not be resolved with the laboratory, qualify associated data as unusable (R).

14. OVERALL ASSESSMENT AND SUMMARY

Has the laboratory conducted the analysis in accordance with the analytical SOW? (Yes) No N/A

Were project specific data quality objectives met for this analysis? (Yes) No N/A

ACTION: Summarize all the data qualifications and complete the data validation narrative as specified in Section 10 of the data validation requirements.

water mg/L

WET CHEMISTRY/ANIONS ANALYSIS, ~~SOIL~~ MATRIX, (~~mg/kg~~)

Project: WESTINGHOUSE-HANFORD																					
Laboratory: ROY F. Weston																					
Case	SDG: B07L90																				
Sample Number		B07L90																			
Location		699-93-49B																			
Remarks		SPLIT																			
Sample Date		10/30/92																			
Analytes	Method	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
~~Fluoride~~	~~300.0~~																				
~~Chloride~~	~~300.0~~																				
~~Nitrite~~	~~300.0~~																				
~~Nitrate~~	~~300.0~~																				
~~Sulfate~~	~~300.0~~																				
~~Phosphate~~	~~300.0~~																				
~~pH (pH units)~~	~~150.1~~																				
~~Ammonia~~	~~350.3~~																				
Alkalinity	310.1																				
Chloride	300.0																				
Fluoride	300.0																				
COD	410.1																				
Phosphate	300.0																				
Sulfate	300.0																				
NO3NO2 (mg N/L)	353.1																				
Ammonia, ASN	350.3																				
TOC	415																				
pH (pH units)	150.1																				
Sulfide	376.2																				
Spec. Conduct. (umhos/cm)	120.1																				
TDS	160.1																				
TOX (ug/L)	9020.1																				

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INORGANIC ANALYSIS DATA VALIDATION CHECKLIST - FORM A-6

PROJECT: Westinghouse Hanford	REVIEWER: SC	DATE: 4-26-93
LABORATORY: ROY F. Weston	CASE:	SDG: B07L90
SAMPLES/MATRIX: water		
B07L90, B07L92		

1. COMPLETENESS AND CONTRACT COMPLIANCE

Review the data package for completeness and check off the items below. If any data review elements are missing contact the laboratory for submittal of the omitted data.

Data Package Item	Present?:	Yes	No	N/A
Case Narrative	✓	—	—	
Cover Page	—	✓	—	—
Traffic Reports		✓	—	—
Sample Data				
Inorganic Analysis Data Sheets		✓	—	—
Standards Data	✓			
Initial and Continuing Calibration Verification	—	✓	—	
CRDL Standard for AA and ICP		—	—	—
QC Summary	✓			
Blanks	—	✓	—	
ICP Interference Check Summary		✓	—	—
Spike Sample Recovery		✓	—	—
Post-Digestion Spike Sample Recovery		—	—	✓
Duplicate		✓	—	—
Laboratory Control Sample		✓	—	—
Standard Addition Results		—	—	✓
ICP Serial Dilutions		✓	—	—
Instrument Detection Limits		✓	—	—
ICP Interelement Correction Factors	✓	—	—	
ICP Linear Ranges		✓	—	—
Preparation Log		✓	—	—
Analysis Run Log		✓	—	—
Raw Data				
ICP Raw Data	✓	—	—	
Furnace AA Raw Data	—	—	—	
Mercury Raw Data		✓	—	—
Cyanide Raw Data		✓	—	—
Additional Data				
Internal laboratory chain-of-custody	✓	✓	—	
Laboratory Sample Preparation Records		—	—	—

Data Package Item	Present?:	Yes	No	N/A
Percent Solids Analysis Records				✓
Reduction Formulae			✓	
Instrument Run Logs	✓			
Chemist Notebook Pages		✓		

2. HOLDING TIMES

Have all samples been analyzed within holding times? (Yes) No N/A

ACTION: If any holding times have been exceeded qualify all affected results as estimated (J for detects and UJ for non-detects).

3. INITIAL CALIBRATIONS

Were all instruments calibrated daily, each set-up time and were the proper number of standards used? (Yes) No N/A

Are the correlation coefficients ≥0.995? (Yes) No N/A

Was a midrange CN standard distilled? (Yes) No N/A

ACTION: Qualify all data as unusable if reported from an analysis in which an instrument was not calibrated or was calibrated with less than the minimum number of standards. Qualify associated sample results > IDL as estimated (J) and results < IDL as estimated (UJ), if the correlation coefficient is < 0.995 or the laboratory did not distill the midrange CN standard.

4. INITIAL AND CONTINUING CALIBRATION VERIFICATION

Are ICV and CCV percent recoveries within control? (Yes) No N/A

Are there calculation errors? Yes (No) N/A

ACTION: Qualify all affected data in accordance with Section 8.3 of the validation requirements. If calculation errors are noted, contact the laboratory for clarification.

5. ICP INTERFERENCE CHECK SAMPLE

Has an ICS sample been analyzed at the proper frequency? (Yes) No N/A

Are the AB solution %R values within control? (Yes) No N/A

Are there calculation errors? Yes (No) N/A

ACTION: Qualify all affected data in accordance with Section 8.3 of the validation requirements. If calculation errors are noted, contact the laboratory for clarification.

6. LABORATORY BLANKS

Are target analytes present in the laboratory blanks? (Yes) No N/A

ACTION: Qualify all associated sample results for any analyte <5X the amount in any laboratory blank as non-detected (U). If analyte concentrations in the blank are greater than the CRDL or below the negative CRDL, verify the laboratory has redigested and reanalyzed associated samples with analyte concentrations less than 10x the blank concentration. If the laboratory has not redigested and reanalyzed the samples, note in the validation narrative.

7. FIELD BLANKS

Are target analytes present in the field blanks? Yes No (N/A)

ACTION: Qualify all sample results for any analyte <5X the amount in any valid field blank as non-detected (U).

8. MATRIX SPIKE SAMPLE ANALYSIS

Are spike recoveries within the control limits? (Yes) No N/A

ACTION: Qualify the affected sample data according to the following requirements:

If spike recovery is >125% and sample results are <IDL no qualification is required. If spike recovery is >125% or <75% qualify all positive results as estimated (J). If spike recovery is 30% to 74% qualify all non-detects as estimated (UJ). If spike recovery is <30%, reject all non-detects (R). If the field blank has been used for spike analysis, note in the validation narrative.

9. LABORATORY CONTROL SAMPLE

Are percent recoveries within the acceptance limits? (Yes) No N/A

Are there calculation errors? Yes (No) N/A

ACTION: Qualify the sample data according to the following requirements:

AQUEOUS LCS - Qualify as estimated (J), all sample results > IDL, for which the LCS %R falls within the range 50-79% or > 120%. Qualify as estimated (UJ), all sample results < IDL, for which the LCS falls within the range of 50-79%. Qualify as unusable (R) all sample results, for which the LCS %R <50%.

SOLID LCS - Qualify as estimated (J), all sample results > IDL for which the LCS result is outside the established control limits. Qualify as estimated (UJ), all sample results < IDL for which the LCS %R are lower than the established control limits.

10. PERFORMANCE AUDIT ANALYSES

Are the performance audit sample results within the acceptance limits? Yes No (N/A)

ACTION: Note the results of the performance audit sample analyses in the data validation narrative.

11. DUPLICATE SAMPLE ANALYSIS

Are RPD values acceptable? (Yes) No N/A

ACTION: Qualify the results for all associated samples of the same matrix as estimated (J) if the RPD results fall outside the appropriate control limits. If field blanks were used for laboratory duplicates, note in the validation narrative.

12. ICP SERIAL DILUTION

Are the serial dilution results acceptable? (Yes) No N/A

Is there evidence of negative interference? Yes (No) N/A

ACTION: Qualify the associated data as estimated (J) for those analytes in which the %D is outside the control limits. If evidence of negative interference is found, use professional judgment to qualify the data.

13. FIELD DUPLICATE SAMPLES

Do the RPD values exceed the control limits? Yes No (N/A)

ACTION: Note the results of the field duplicate samples in the validation narrative.

14. FIELD SPLIT SAMPLES

Do the RPD values exceed the control limits? (Yes) No N/A

ACTION: Note the results of the field split samples in the validation narrative.

1516. FURNACE ATOMIC ABSORPTION QUALITY CONTROL

Do all applicable analyses have duplicate injections? (Yes) No N/A

Are applicable duplicate injection RSD values within control? Yes (No) N/A

If no, were samples rerun once as required? (Yes) No N/A

Does the RSD for the rerun fall within the control limits? Yes (No) N/A

Were analytical spike recoveries within the control limits? Yes (No) N/A

If no, were MSA analyses performed when required? Yes No N/A

Are MSA correlation coefficients $\geq$0.995? Yes No N/A

If no, was a second MSA analysis performed? Yes No N/A

ACTION: If duplicate injections are outside the acceptance limits and the sample has not been reanalyzed or the reanalysis is outside the acceptance limits, qualify the associated data as estimated (J for detects and UJ for non-detects). If the analytical spike recovery is less than 40 percent qualify detects as estimated (J). If the analytical spike recovery is greater than or equal to 10% but less than 40 percent, qualify all non-detects as estimated (UJ) and if the analytical spike recovery is less than 10 percent, reject all non-detects (R). If the sample absorbance is less than 50% of the analytical spike absorbance and the analytical spike recovery is less than 85% or greater than 115%, qualify all results as estimated (J for detects and UJ for non-detects). If method of standard additions (MSA) was required but was not performed, the MSA samples were spiked incorrectly, or the MSA correllation coefficient was less than 0.995, qualify the associated detected results as estimated (J).

17. ANALYTE QUANTITATION AND DETECTION LIMITS

Have results been reported and calculated correctly? Yes No N/A

Are results within the calibrated range of the instruments and within the linear range of the ICP? Yes No N/A

Are all detection limits below the CRQL? Yes No N/A

Action: If analyte quantitation is in error, contact the laboratory for explanation. If errors or deficiencies can not be resolved with the laboratory, qualify associated data as unusable (R).

18. OVERALL ASSESSMENT AND SUMMARY

Has the laboratory conducted the analysis in accordance with the analytical SOW? Yes No N/A

Were project specific data quality objectives met for this analysis? Yes No N/A

ACTION: Summarize all the data qualifications and complete the data validation narrative as specified in Section 10 of the data validation requirements.

INORGANIC ANALYSIS, ~~SOIL~~ water MATRIX, (~~mg/kg~~ mg/L)

Project	Westinghouse-Foo Fmg																				
Laboratory	ROY F. Weston																				
Case	SDG B07L90																				
Sample Number		B07L90		B07L92																	
Location		699-93-49B		699-93-49B																	
Remarks		SPLIT		SPLIT, FIL																	
Sample Date		10/30/92 →																			
Inorganic Analytes	CRQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Aluminum	200																				
Antimony	60																				
Arsenic	10																				
Barium	200																				
Beryllium	5																				
Cadmium	5																				
Calcium	5000																				
Chromium	10																				
Cobalt	50																				
Copper	25																				
Iron	100																				
Lead	3																				
Magnesium	5000																				
Manganese	15																				
Mercury	0.2																				
Nickel	40																				
Potassium	5000																				
Selenium	5																				
Silver	10																				
Sodium	5000																				
Thallium	10																				
Vanadium	50																				
Zinc	20																				
Cyanide	10																				

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